# IBM SERIES/1-A
# COMPUTER SERVICES OPPORTUNITY

INPUT EUROPE

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The company carries out continuous and in-depth research. Working closely with clients on important issues, INPUT's staff members analyse and interpret the research data, then develop recommendations and innovate ideas to meet client's needs. Clients receive reports, presentations, access to data on which analyses are based, and continuous consulting.

Many of INPUT's professional staff members have nearly 20 years experience in their areas of specialisation. Most have held senior management positions in operations, marketing,

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# IBM SERIES/1

# A COMPUTER SERVICES OPPORTUNITY

## IMPACT REPORT #1

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# IBM SERIES/1

# A COMPUTER SERVICES OPPORTUNITY

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# I. INTRODUCTION

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- In July and August 1977, INPUT (US) conducted 56 on-site and telephone interviews with IBM Series/1 users, systems houses, hardware integrators, plug-compatible peripherals and add-on memory suppliers, minicomputer manufacturers and IBM marketing/sales personnel.

- At that time IBM Series/1 installations were just getting underway, the installed base was small (200 externally installed systems) and little was known by the EDP vendor community as to the degree of success of the Series/1, how it was being installed, by whom, in competition with which systems, which market targets were being focussed on, which targets were being hit etc etc.

- Despite wide-spread lack of concern by the major minicomputer competitors, the report clearly identified the degree to which they were being impacted and the steps to be taken in avoiding the loss of growth potential.

- In July 1978, with shipments underway since February in Western Europe, INPUT EUROPE initiated a similar study of the Series/1 in the UK, West-Germany, France and Italy. The interview schedule is shown in Exhibit I-1. With respect to the targeted interviews, there was an abundance of talkative users, systems houses, plug-compatible peripheral suppliers and competitors in most countries, France being the exception.

- The study did not attempt to exhaustively examine competitive comparisons since these are (i) freely available elsewhere (ii) best appreciated by internal analysis done by each vendor in his own market environment. Instead, the report concentrated on understanding the market role of the Series/1, the reasons underlying its success, the problems met by IBM in bringing it to market, the users' reactions and the likely profile of the Series/1's penetration and impact on the minicomputer and small business markets.

- With cross reference from user sites of the outside software houses used and from these software houses of the users they serve, a list of the IBM Series/1 commercial activity in each country was quickly buit up. These were then interviewed by telephone, based on the questionnaire in Appendix 1. The hardware competitors and software/systems houses were interviewed by on-site visits and telephone, using the combined questionaire in Appendix 2.

- A sample list of the companies interviewed is given in Appendix 3. The exchange rates used in the report are shown in Appendix 4.

- On the whole users were quite responsive in providing details on their reasons for choosing IBM, their relative satisfaction with the product, the amounts spent on developing software etc. In Germany, however, there were some users who were concerned that IBM would learn of their comments (!). In France, there was some difficulty in obtaining lists of clients due to (a) the small volume installed at the time of interviewing and (b) the reluctance of systems houses to talk about their lack of business with the Series/1.

## A. STUDY SCOPE

- The aim of the present report is to extend the relevance of the data collected from the European study on Series/1 by analysing its applicability to the opportunities for computer services suppliers.

- The report forms part of the European Market Analysis Service (MAS/EUROPE).

## INTERVIEW SAMPLE BY TYPE OF INTERVIEWEE

| TYPE | DESCRIPTION | UK | F | WG | IT | TOTAL |
|---|---|---|---|---|---|---|
| USER A | Purchased Series/1 from IBM for in-house use | 10 | 9 | 14 | 14 | 60 |
| USER B | Purchased Series/1 from IBM for service to others | 5 | 1 | 3 | 4 | |
| System House | Provides Series/1 software or turnkey systems to users | 10 | 1 | 2 | 3 | 16 |
| IBM | Marketing or Sales Representatives specialized in Series/1 sales | 2 | 2 | 2 | 2 | 8 |
| Competitor | Minicomputer manufacturers or small business/office computer suppliers who compete with the Series/1 | 3 | 2 | 3 | 4 | 12 |
| Peripheral Manufacturer | Potential supplier of peripheral equipment and add-on memory to the Series/1 | 4 | 2 | 2 | 2 | 10 |
| TOTAL INTERVIEW PROGRAM | | 34 | 17 | 26 | 29 | 106 |

EXHIBIT I-1

- The report has four main goals :

  - review the state of Series/1 developments and sales as at the year end of 1978;

  - analyse the implications for the services vendor of the projected future for Series/1 taken in conjunction with IBM's strategy as a Data Services vendor over the lifetime of the product;

  - suggest the options available to the services vendor depending on what market sector or sectors he is, or intends to be, engaged in - RCS, on-site computing, turnkey systems, applications, systems software products, or merely contract programming;

  - forecast over a forward 4-year period the likely mix of services required by Series/1 users and make recommendations about the best marketing strategies to optimise the business parameters for working in this sector of the market.

- The study has drawn on various work carried out by INPUT in both 1978 and 1979 on European computer services markets and, especially, on the trend towards distributed data processing (DDP).

- Comments and enquiries from clients using this report are invited and welcomed.

## B. DEVELOPMENT STATUS OF IBM'S MARKETING EFFORT

- When reading this report, it must be born in mind that IBM'S marketing/sales efforts have not had time to be fully organised and developed. Thus, while the present penetration of Series/1 can be analysed and conclusions drawn as to the degree of impact the product will have on competitors, and the industry sectors where the product will find targets, it must be remembered that a policy change by IBM could rapidly modify the profile of the end-user base.

- To date, IBM has organised, in each country, a central Series/1 marketing group which has pre-sale support responsibility. The group has consisted of a product manager and 5-10 sales support personnel with the combined role of direct sales and product sales support. The direct sales function will be progressively transferred to the country branches, with a corresponding increase in effective Series/1 sales pressure on the market. This transfer is starting to take place as from the beginning of 1979. IBM's General Systems Division (GSD),which forms a part of General Business Group (GBG), are taking over this responsibility.

# II. EXECUTIVE SUMMARY

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- The announcement of the IBM Series/1 in November 1976 was greeted in Europe with more emotional reaction than clear analysis. Here was IBM finally entering the lucrative minicomputer market to challenge the established positions of the market leaders.

- If such was the intention of IBM, the industry giant certainly went about it in a strange way : little systems or application software was provided, disk storage was inadequate for many basic requirements, but most of all, the cardinal market rule of the minicomputer industry, quantity discounts, was not followed.

- When seen in the light of IBM's Business Strategy however, these characteristics of the product and its support all fall into a logical pattern.

### A. IBM'S SERIES/1 BUSINESS STRATEGY

- The basic objective of the IBM's Series/1 had, at first, little to do with the minicomputer market itself. The Series/1 of 1979 is only now starting to challenge the minicomputer vendors. The early Series/1 was not aimed at penetrating new markets for IBM nor was it designed as a means of taking IBM into the expanding minicomputer market.

- The Series/1 has been, in Europe, a defensive move to protect IBM's traditional mainframe market (particularly the medium and large scale 370s) from infiltration by the competition through the small business system and mini-computer-based communications systems. There is evidence to support a growing need, at these sites, for distributed processing, and the IBM Series/1 is a good answer to this.

- In doing so, IBM has had to ensure that self-impact from Series/1 is minimized; there are many product areas which would be in danger of losing business to the Series/1 if an "open market" strategy were adopted e.g.:

    - The Series/1 could easily act as a data capture system controller, in conflict with the 3790, and its newer successor the 8100 series

    - Given an RPG compiler, the System/3 and System/32, 34 and 38 prospects would become Series/1 targets.

- The inescapable conclusion of this is that the commercial success of the IBM Series/1 is a matter of secondary importance to IBM. It may, through the growing number of systems houses and software houses supporting it (and the slow addition, by IBM, of additional software tools like COBOL), develop a strong market of its own ; this will be all well and good provided it meets its primary goal of defense of the IBM medium and large sites.

- The high volume O.E.M. market should in theory be non-existent at present, because of the no-discount policy adopted by IBM. In practice the IBM name is adequate attraction, and single sales of up to 150 units have been notched up.

- That the Series/1 will be having a growing impact on the minicomputer market is undeniable; but if IBM so wished, the impact could be far greater. For this reason an evaluation of the likely success of the Series/1 must be based on the current product plus the expected strategic intentions of IBM, rather than a logical process of assessing the market needs and the competition's challenge.

- This is, however, just the beginning of the IBM Series/1's commercial life. While IBM has adopted a policy of caution and limited scope for the product in its early life, (with self-impact looming large in the list of preoccupations) the product (like all IBM products) has already begun to evolve along its development path with the addition of IBM enhancements in hardware and software. Plug-compatible products offered by third parties and a ballooning variety of system and application software aids enhance the attraction of the Series/1 for a growing spectrum of users.

- Meanwhile, the system houses are gradually organising and developing the Series/1 turnkey business, mainly in volumes of one to five systems, using to full advantage the attraction to users of IBM's name, reliability and customer engineer support coverage that is unequalled.

## B. ASSESSMENT OF THE SERIES/1 IMPACT ON THE EUROPEAN MINICOMPUTER MARKET

- There are two distinct areas where the Series/1 is impacting the minicomputer business in Europe :

  - the growth of the total minicomputer market, adding to the impetus provided by the large community of existing suppliers ; this impact has been (a) a very significant and (b) positive

  - the competitive displacement of minicomputers from other vendors; this has had a limited negative impact on the competition.

- The main minicomputer competitors to the Series/1 are unanimous in experiencing an almost total absence of competitive contact with the Series/1, uptil now. "Not a single competitive loss has been registered so far", is a frequent comment. In reality, potential sales have been lost, (see Exhibit IV-6).

- The total number of installed Series/1 minicomputers at 31/8/78 was 265 and estimated by INPUT to be 940 systems by year end, given the average monthly shipment rate in each country. The ship rate was derived from interviews with systems houses ; - the orders and installations are the grossed-up sum of customer and system house orders found in country interviews.

- Therefore, while 1978 has been a quiet year for the Series/1, the second half of 1979 will see a swift improvement in orders, just as IBM's teething troubles in manufacturing and delivery will have been eased.

## C. USER REACTIONS IN THE MAIN MARKETS

- When viewed through the user's eyes the Series/1 takes on an interesting profile and one that is a complete departure from IBM's habitual product policy. The following analysis, provided by a user, is particularly relevant in this regard :

  "IBM's Series/1 is public property - a collection of building blocks that allow the user to assemble the system of his choice, a processor with a flexible interface that allows all manner of non-IBM devices to be connected to it, and a hardware tool that will shortly be supporting a wide variety of user-developed, systems house-developed, IBM-developed systems and application software".

  Seen this way, the Series/1 can provide a modular processing unit for the construction of a wide range of applicational needs.

- Across the board, the user reaction to the Series/1 was one of surprise at the lack of preparation shown by IBM before presenting the product. Comments on IBM's support ranged from "its all right, but it could be a lot better" to "I think IBM panicked in bringing this product out before it was ready, to combat the other minis".

- Most felt the price was right, and cited it often as one of the main deciding factors in the "buy" decision. All were concerned at the lack of good software and the speed with which the software that is available uses up memory. A large number of users are developing their own software and some have resorted to selling it.

- All of the users interviewed during the survey bought their Series/1 from IBM and the majority (54%) either had already developed or were in the process of developing their own systems/software in-house. Of the remainder only one half had their programming done by a Software House, and the others either received IBM assistance in developing their own systems or had them developed by IBM directly. Where this latter solution was found, IBM frequently retained the license/rights to the resultant product. The majority expect to do all future programming in-house.

- The one major concern about the system was its memory size limitation, insofar as (a) some applications, both commercial and scientific, are more easily resolved with more memory space, (b) since the announcement of COBOL, users are convinced that the larger memories are a must, (c) memory occupancy by RPS is considered to be too high.

- The degree of satisfaction with the installed systems was generally low, and often the product's evaluation was being treated with a great deal of caution. The Series/1 has not yet convinced early users.

- The typical one-time programming costs spent on installations are shown in Exhibit VIII-2. The range of "per site" costs for programming carried out by external software/system houses is largest in West Germany because of the larger installations found. Correspondingly, the per-system cost was the lowest. The United Kingdom is the lowest spender for software develop-ment, but several companies (e.g. Associated Portland Cement, Thomas Cook) have taken to not only writing their own system software, but aggressively marketing it to other sites also.

## D. COMPETITOR ATTITUDES AND RESPONSES

- In general competitors were surprised (and relieved) to discover that the Series/1 has not proved a strong minicomputer competitor so far. This is mainly due to its limited marketing support and inadequate software.

- As a result of this lack of impact, there has been no attempt by competition to modify the sales approaches used hitherto. In fact most competitors have found that the advent of the Series/1 has opened up the market.

- All competitors reported bumper years in sales and were confident of exceeding next year's sales targets.

- IBM's main strengths are perceived as (i) the IBM label and (ii) the ease of installations of the Series/1 ("we bought one to look at it and we were surprised how easily it went in").

- Unanimously the lack of adequate software was found to be the main product weakness in the eyes of the competition. Most minicomputer vendors have trodden that route themselves before and can remember the installation/implementation problems caused by the lack of software.

## E. THE OPPORTUNITY FOR ASSOCIATED SERVICES

- The steady development of Series/1 as a product has now reached the stage where IBM is established in the minicomputer field (still with less than 3% of the market) and has brought to that field a degree of respectability. At the same time IBM's plans for DDP and the next generation of bottom-end mainframes have been unveiled in the forms of the 8100 Series "closely-coupled" processors for DDP and 3790 replacement, and of the 4300 ("E" Series) processors for replacement of System/370s from the Model 115 to the Model 138.

- Taken together with the continual upgrade of its GSD products (3370 570MB Disk Drives from the E Series are now offered on System/38) IBM can be seen to be reluctant to relinquish its traditional mainframe approach. As a supplier of hardware, it cannot be expected to. This leaves Series/1 as the "odd-ball", offering the "alternative" approach.

- This conflict of solutions within IBM's product range (in some ways deliberately fostered by IBM top management as a means of ensuring the survival of the most cost/effective approach) is what creates the opportunity for the services vendors, both RCS vendors and system and software houses. IBM cannot without generating excessive self-impact stimulate the mini-computer market more vigorously than it has done so far. The Series/1 product, however, is a good one, and its main roles will be for the small business computer field or for the established user branching into DDP.

- Both areas are natural markets for the services vendors and both can be attacked using Series/1. Because of IBM's new approach to support and its desire in the 1980's to move to multiple-installation volume sales for each of its existing users, IBM is increasingly, though not yet openly, dependent on the third party system vendors.

- IBM is controlling self-impact by handing over the Series/1 to GSD for volume sales, while offering its DDP users alternative "mainframe-like" solutions.

- INPUT projects that from shipments worth $46.3M in 1978, Series/1 in Europe will grow to a $1.04B market in 1981, and thereafter decline, subsequently to an IBM announcement of a replacement, to a level of $412M by 1983. This expansion in a field in which IBM is still relatively new cannot be accomplished without extensive involvement of third parties on the services side ranging from Remote Computing Services (RCS) vendors through to small software companies.

## F. APPROACHES TO THIS MARKET

- There are basically two approaches to involvement with Series/1 for a services vendor :
  - aim to supply turnkey solutions based on Series/1, selling and, possibly, also maintaining the system independently of IBM,
  - aim to provide application and system software to Series/1 users, working as closely as possible with IBM's GSD sales staff in order to maximise exposure of one's capabilities without attempting the greater risks of turnkey implementation.
- Services vendors should determine into which approach they are going to throw their energies. While retaining flexibility to deal with individual sales situations, vendors will experience greater success if they concentrate their scarce sales/marketing resources on one approach or the other.
- The first approach is most suitable for the large company :
  - the RCS vendor wishing to break into combination processing in order to display a capability in offering effective solutions to DDP users,
  - the large systems houses (with turnover in excess of $10M), who, for example, are seeking to narrow the machine base on which they work for the purpose of increasing their turnkey effectiveness.
- The second approach fits the small independent software company, (turnover less than $1M), who are already used to obtaining prospects from the hardware suppliers on whose equipment they work. By avoiding the turnkey offering, and by letting IBM do the effective qualification of prospects, this size of company can minimise the effect of IBM's no-discount policy.

- As one might expect, the medium-sized system/software suppliers are faced with the choice of either approach. By adopting the turnkey approach they come into contention with their larger competitors, but increase their chances of expanding on the back of prestigious contracts. Taking the second course may increase their volume sales and smooth their sales input peaks, but it is also moving them down market where the margins are normally tighter.

- INPUT recommends that in spite of the difficulty of making a decision on approach, it is imperative to do so if resources are not to be overstretched, with consequent project failures and loss of company standing. As a discriminating factor to assist in this choice, companies should look at the types of industry with which it has worked in the past and gear their policies towards increasing specific industry penetration. The future for services suppliers lies in application specialisation for individual industries. Having a computer-assisted estimating system for the construction industry allows management to focus its efforts more sharply than does just the offer of a general computer estimating system. Similarly, accounting systems for the insurance industry will find a readier market than general purpose accounting packages.

- These considerations will vary from country to country. The successful companies will have considered both the quantifiable factors and the imponderables, and will come to a clear marketing strategy which can be made visible to their prospects and to IBM.

## G. SIZES OF MARKET SECTORS

- In both OEM hardware sales and application software production, the Series/1 offers a new opportunity to vendors who have not previously worked with the equipment, as well as to the systems houses with Series/1 projects to their credit.

- Pure system software production does not offer a new market opportunity, justifying entry into the Series/1 sector. However, there are two exceptions to this generalisation :

  - where a software house specialises in system software and has an established network of outlets for its products among other user implementation orientated software/systems companies, a reasonable proportion of whom are themselves entering the Series/1 sector, it may well profit such a house to fill a specific gap in IBM's software for one or more of its clients,

  - the large systems houses who are launching their Series/1 offering as a turnkey solution, will find it increases their viability and independence from IBM to build their own system development software environment. This may limit the range of compilers/operating systems which can be used and such restrictions will need justification with reference to their intended markets, but the advantage is that they can increase their own and their client's programming productivity by this form of standardisation.

- For the smaller software houses, it is essential to establish a policy with respect to operating systems and application languages, and this may include licensing of system products from the U.S. or European sources, but it is inadvisable to embark on large scale software development before completion of some successful Series/1 projects.

- Hardware revenues for OEM suppliers are expected to rise from $4.2M in 1978 to a peak in 1981 of $135.2M, at which point they represent 15% of IBMs sales for that year. With the anticipated announcement of a replacement product for the Series/1 in early 1982, revenue from OEM sales will fall in 1982 to $81.7M or 12% of IBM's sales (see Exhibit VIII-4).

- Revenue from supply of application software starting from a modest $3.6M in 1978 will peak in 1981 at $84.5M, falling away to $64.3M in 1982. These figures represent respectively 164%, 107% and 110% of IBM's application software and support revenues (see Exhibit VIII-5) for the same years.

- It is interesting to speculate on the future of services vendors with the replacement product which IBM will bring out. While this can at this stage only be idle speculation, it is worth noting that the total amount of business done during the four forward years, 1979 through 1982 will justify market entry to the sector irrespective of whether the replacement product is compatible with Series/1 or not. The figures for business turned over in these years are :

  - hardware OEM sales - $346M
  - system software - $ 21M
  - application software - $224M

# III. SERIES/1 BACKGROUND AND DEVELOPMENTS

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## A. CURRENT IBM SERIES/1 HARDWARE AND SOFTWARE

- When INPUT published the IBM Series/1 multiclient study in September 1977, the current Series/1 continuing hardware and software enhancements were projected. A list of IBM current hardware and software products including the announced enhancements through January 1979 is contained in Appendices 6 and 7.

- The INPUT forecasts for increased main memory, a smaller processor, increased disk storage capacity, tape drives and an enhanced communications module contained in the earlier study have all occurred. The communications subsystem, however, was not forecast for announcement until mid-1979.

- Hardware enhancements forecast which have not occurred are a non-impact printer and larger members of the Series/1 family.

- IBM software enhancements have been impressive. From a "naked" minicomputer, the Series/1 currently has enough software available to dispel any thought that software support would be left entirely to the system houses.

- However, Series/1 has attracted many hardware and software vendors anxious to fill any gaps (temporary or otherwise) in the IBM product plan and to compete against IBM on a price/performance basis.

- As it becomes increasingly obvious that peripherals, software, and services will account for a very high percentage of Series/1 revenues, users can be assured of a continuing stream of hardware and software enhancements.

## B. ANALYSIS OF IBM'S SERIES/1 STRATEGY

- Minicomputer technology (and price/performance) presents enormous potential for extending computer power to very small business enterprises and establishments. However, the distribution of data processing also has the potential for impacting IBM's entire product line from 3033s down through System/3s and the 30 series to keypunches, word processing equipment, and typewriters. The IBM management challenge is to exploit new markets with Series/1 while controlling this impact. The carefully timed announcements of Series/1 enhancements reveal IBM's strategy in this regard.

- The announcement of Series/1 as a relatively "unsupported" minicomputer had numerous advantages for IBM :

    - It emphasized IBM could be price/performance competitive against minicomputer vendors.

    - It focused attention on relatively cheap IBM configurations because software and peripherals were not available (tending to obscure the real growth areas).

    - It automatically restricted the market opportunities for the IBM sales force. (This was a dual benefit - restricting self-impact and concentrating the sales effort while the marketing organisation was being developed).

    - It created a major market for system houses (which in turn solved some of IBM's initial marketing problems by assuming responsibility for selling to the small end users). In addition, this external programming resource was not available to support competitive systems. More systems programming effort (both IBM and software houses) is being applied to Series/1 than any other minicomputer in existence - this will produce both short- and long-term benefits.

- Applications emphasis on Series/1 has been directed towards market segment in which IBM has been weak.

  - The energy conservation and process control applications are ones where substantial investment had already been made (System/7 and supporting software) without the type of return IBM prefers to see. There is no question that Series/1 was prompted by lack of success with sensor based systems.

  - The multifunction work station application is directed to the market created by competitive intelligent data entry (and RJE) systems which promise significant off-loading of System 370 hosts. (The General Business Group of IBM can develop more enthusiasm for this approach than the Data Processing Group).

  - The intelligent terminal subsystem offers an attractive alternative to the IBM 3277 Display Station and its numerous competitors,

  - The Series/1 as a communications concentrator attempts to strengthen IBM in an area of traditional technical weakness without impacting profitable portions of DPD's System Network Architecture. However, from an IBM corporate viewpoint a little in-house competition for SNA can only be healthy.

  - Stand-alone business applications are not being emphasized by IBM and are still being left to system houses to support, (GBG would rather compete with DPD than impact its own product lines). This has been a rather successful tactic. Some reports on small business systems ignore

Series/1 completely. Perhaps the recent addition of COBOL to IBM's support may change this, but it is obvious IBM is moving slowly on support for a stand-alone business environment. The reasons are obvious.

- Series/1 is viewed as a distributed processing alternative to SNA. This alternative is being made available to smaller enterprises and establishements which either cannot afford SNA or prefer to avoid the burden of large host processing. However, IBM (DPD) will not abandon SNA and the internal competition (which IBM corporate management is encouraging) will continue over the next few years.

- Actually the competition is only temporary. Series/1 is designed as the first step towards the integration of business communications, data processing, and word processing. Cheap engines are required to sell terminals, storage and problem solutions (software). The ultimate objective is office and factory automation which does not necessarily conflict with IBM's concept of large, centralised host systems.

- In fact, there is only one missing ingredient for IBM to be able to provide a totally integrated information system. That missing ingredient is communications services which will become available through Satellite Business Systems in the early 1980s.

## C. SERIES/1 PRICING ANALYSIS BY COUNTRY

- It is not possible to determine the transfer price of the IBM Series/1 produced in Vimercate, Italy and sold to the Western European countries. However, it is possible to obtain some measure of the mark up on prices practised by IBM on the Series/1 in Europe, with respect to the United States. Assuming the transfer price to be constant, this approach also indicates the level of profitability of the product in each country.

# PRICE VARIANCE OF THE SERIES/1 CONFIGURATIONS IN WESTERN EUROPE, BY COUNTRY, COMPARED TO U.S.

| COUNTRY | % INCREASE OVER U.S. PRICES | | | | COUNTRY VARIANCE FROM AVERAGE |
|---|---|---|---|---|---|
| | PROCESSOR AND MEMORY | FEATURES & PERIPHERALS | PROGRAMME PRODUCTS | MMMC* | |
| WEST GERMANY | 40% | 40-58% | 41-44% | 30-42% | + 19% |
| FRANCE | 23-35% | 34-43% | 33-34% | 30-32% | – 3% |
| ITALY | 24% | 38-39% | 33-63% | 20-42% | + 1% |
| UNITED KINGDOM | 30% | 30% | 30-34% | 30% | – 13% |
| AVERAGE | 30.75 | 39 | 39 | 32 | |

* MMMC = MINIMUM MONTHLY MAINTENANCE CHARGE

EXHIBIT III - I

INPUT

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- The method used was to relate the U.S. price for each module or product line item to the price of the same module/item in each country market examined, and to divide that monetary equivalent by the current exchange rates (see Appendix 5). This then shows not only how the mark-up varies with each aspect of the product, but also how it varies from country to country, above and beyond the profit margin already contained in the U.S. prices. (Note : This does not allow for any difference in the manufacturing cost at Vimercate as opposed to the U.S.).

- The four major categories of items analysed were (i) Processor and main memory, (ii) Features and Peripherals (iii) Programme Products and (iv) maintenance charges (see Exhibit III-1). Actual values appearing in the chart should not be accepted at face value but used as relatvie indicators, since the fluctuation in European currencies will cause some distortion.

- Analysis shows that the mark-up is highest in software, peripherals and add-on features - a clear indication of IBM's product strategy. This clearly means that while the basic configurations (small number of peripherals, no software) must be competitive, once the client is installed, the programme products and add-on peripherals and features will maximize IBM's revenue. Maintenance charges, for a sales-only product are a visible item and must be competitive with the market rate.

- On a country basis, the market price for competitive price/performance products allows the Series/1 to be sold at different mark-up levels. Taking the average of the four countries as the norm, it is clear that the U.K. market is by far the least profitable, but undoubtedly the most competitive. West Germany on the other hand must obtain substantial profits from the Series/1, compared to the other main European markets. Coincidentally, it is also the most expensive market from the standpoint of manpower costs (sales, systems/analysts, customer engineers etc).

## EXHIBIT III-2

## REVENUE BREAKDOWN OF "TYPICAL" SERIES/I CONFIGURATIONS

| Application | Processor and Main Memory | Features and Peripherals* | System/Applications Programming | MMMC |
|---|---|---|---|---|
| | Percent of Revenue (5 years) | | | |
| Small Energy Conservation | 16% | 24% | 29% | 31% |
| Standalone Business (Small) | 12% | 43% | 13% | 32% |
| Multifunction Work Station | 16% | 40% | 8% | 36% |
| Intelligent Terminal | 20% | 38% | 3% | 39% |
| Communications Concentrator | 20% | 39% | - | 41% |
| Process Control** | 19% | 42% | 3% | 36% |
| Average | 17% | 38% | 9% | 36% |

* Including Terminals
** Excluding RPQ's

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## D. SERIES/1 REVENUE ANALYSIS OF TYPICAL CONFIGURATIONS

- At a country or major charge category level, certain features of the IBM pricing strategy are clear. For a more detailed analysis of the revenue produced by the Series/1, it is necessary to examine the product from the users viewpoint. A good basis for this is through the series of IBM "typical" configurations, comparing the revenue produced by each major charge category over a five year period (this eliminates the distortion introduced by one-time charges etc).

- There is clearly no doubt about the application, by IBM to the Series/1, of a strategy of low cost, basic configuration sales, followed by a strong push for feature/peripheral sales. Once the account is captured there is a low risk of his changing suppliers, and a high possibility of application-led growth of each configuration. Hence the emphasis is put on revenue growth from peripherals.

- In Exhibit III-2, although systems and applications costs are a low percentage of the revenue, it must be remembered that a single application charges only have been included. It is not possible to cater for the wide variety of application mixes that can be found on each configuration at actual user sites. It is highly probable that the share of revenue produced by systems/applications software will be double the 9% indicated. This is particularly true since the application and system software is sold on a "single licence" basis.

- IBM "typical" configurations for applications are normally at the extreme low end of practicality - growth is expected.

- Processors and main memory (traditional high revenue sources for IBM) will make substantially less contribution to revenue on Series/1 than IBM has expected in the past, IBM is very aware of this.

- Maintenance (an IBM strength with end users) is exposed as a primary revenue source. In addition, the percentages are calculated based on the minimum monthly maintenance charges. Maintenance has always been a high profit service for IBM and technology will make it even more so.

- Features and peripherals were restricted in terms of both availability and capacity at the time these configurations were developed but are obviously the primary Series/1 revenue source.

- Software showed definite revenue weakness in IBM's "typical" configurations, primarily because it was not available. For example, no software was proposed for the communication concentrator, and only the Base Program Preparation Facilities were included in the stand-alone business configurations.

- Compilers were not deemed to be necessary in any of the six environments and are not included in the costs (an indication of the "minimum" configuration approach).

- Where software was available (Facility Control/Power Management) the programming contribution to revenue jumped to 20%.

- It is understood that IBM's objective is to grow the "typical" configuration in terms of revenue. Announced enhancements give some indication of how these configurations are expected to expand. For purposes of analysis the enhancements will be categorized as follows : processors and main memory, major features and subsystems, input/output, and programming.

- The first new Series/1 processor announced was the 4955E which permits maximum main memory to be doubled to 256KB.

    - This means the largest Series/1 processor (including 256KB main memory) will now cost $22,400 which is an increase of 36% over the 4955D (128KB) which was previously priced at $16,465.

    - When the 4955E was announced, prices on all other processor models were lowered by approximately 8.5%. (Not applied in Appendix 6).

- The Multifunction Work Station configuration in Exhibit III-2 included the 4955D processor with 128KB. If that configuration were upgraded to the 4955E with 256K, it would only result in a 5.6% increase in total revenue over the 5 year assumed life of the system, and proceesors would still represent only 20% of total revenue.

- None of the other configurations had more than 64KB of main memory and the effect of IBM's announcement would be to reduce processor revenue on small configuration by 8.5%.

- It is obvious that Series/1 growth strategy is not based on processor type/model upgrades - quite the contrary.

- Just over a year ago, the only major features (more than $1,000) were the I/O Expansion Unit, various line controllers and adapters, and battery backup. Since then major features and subsystems have been announced.

  - The Programmable Communications Subsystem (PCS) is probably the most impressive. The total price with required and selectable features (1300-controller, 3600 expansion scanner) and console (4990) comes to $9,325.

  - A highly desirable (and significant) feature is channel to channel communications between Series/1 and System 370. The Series/1 -370 Channel Attachment (1200) plus the required System 370 termination enclosure (4993) is priced at $4,800.

  - The Series/1 two-channel switch (4959) connects the I/O Expansion Unit to the I/O channels of two Series/1 processors for purposes of backup. The switch costs $2,550 (the I/O Expansion Unit was most expensive feature previously available - it cost $2,515).

  - These major feautres obviously have greater potential than processors and main memory for increasing configuration revenue, and it should be noted they are all communications oriented tying together processors with terminals and/or other processors. This is important in understanding IBM's overall strategy and will be discussed later.

- IBM major enhancements in the I/O area have been as follows :

  - The IBM Series/1 4963 Disk Subsystem which can be configured to cost as much as $40,580 (nearly twice as much as the largest processor). In addition, multiple 4963 subsystems can be attached to a single processor.

  - Also announced was the 4966 Diskette Magazine Unit priced at $4,705 (which is more expensive than a Model A processor with 16K bytes of storage).

  - All of the typical configurations contained in the Series/1 Digest proposed minimum (perhaps inadequate) on-line disk/diskette storage and made no provision for effective backup.

- Further very recent hardware announcements include :

  - A 4952 (Model 2) processor, rated at 80% power and 73% price of the Model 3.

  - 29MB and 23MB additions to the range of 4963 Disk Units.

  - A middle range Communications multiplexor for up to 8 lines.

  - A VDU from the System/34 range.

  - A range of medium priced 45ips and 75ips tape drives.

- IBM has addressed the software weaknesses of Series/1 by the impressive list of programming announcements contained in Appendix 7.

- The Program Preparation Subsystem has had two new versions released and the price has gone from $1,104 to $1,320 in one year (20% growth).

- RPS has had three new versions released and the price has gone from $1,200 to $2,250 (88% growth).

- Facilities Control/Power Management (FC/PM) was announced (and enhanced). FC/PM I (included in the "typical" configurations) is priced at $6,240. By upgrading to FC/PM 2 and adding FC/PM2 (a feature), the price reaches $11,520 (85% growth).

- An IBM COBOL compiler was made available for $4,000 (including transient library). This compiler is more expensive than either the PL/1 or FORTRAN IV compiler (and library) which were previously available ($3,072 and $1,152 respectively). The effect of this announcement will be to enhance the market for commercial systems sales in addition to providing increased software sales.

- The Series/1 Structural Programming Facility (SPF) is priced at $5,040. This could increase the software associated with the multifunction work station application by 58%.

- In addition, numerous less costly products (e.g. Sort/Merge for $400) and enhancements (FORTRAN IV Realtime Subroutine Library Version 2 for an additional $48) were made available.

- In line with recent hardware enhancements, IAM and EDX are now classified as licensed products, PPS has been upgraded to support the 4952 processor and RPS Version 4 has been upgraded to handle the new VDU and magnetic tapes, although all these enhancements carry certain limitations.

- A separate category of programming revenue is associated with hardware enhancements.

  - The Programmable Communications Subsystem has the : Preparation Facility ($500), Execution Support ($336) and the more recent Extended Execution Support ($1,150) associated with it.

  - The Series/1 System 370 channel to channel requires the Channel Attach Program which costs $1,250. This represents 26% of the hardware cost.

- Various RPQs are available at prices ranging for $24 to $1,842. Field-developed and installed user programs are priced from $150 to $6,240. Programming has truly been unbundled, and it all adds up to additional revenue.

- As usual, programming products also require additional hardware (larger processors and more on-line storage) and advanced versions of operating systems. Thus, enhancements of both hardware and software are synergistic in prompting growth.

- There is no question that the average configuration (both installed and shipped) will grow substantially from those proposed as "typical" in the Series/1 Digest.

  - The most dramatic growth will be in programming (primarily because it was so limited previously).

  - Direct access storage will increase in both size and as a percentage of revenue.

  - Communicating features (and subsystems) will be a fast growing revenue source (as will terminals).

  - Processors and main memory will become of decreasing importance in the total revenue picture.

- Since maintenance is indexed to hardware it will continue to represent a substantial portion of revenue over the life of the hardware (becoming equal to hardware revenue in approximately 7 years at current rates).

## E. IBM'S UNSTABLE BACKLOG

- At this early stage in the Series/1's commercial life in Western Europe, the teething troubles of its implementation are causing concern with some of the companies who have ordered the system, to the point of cancelling their order.

- While it is not uncommon for this to occur in the introduction of products in a new market area, it is obviously not acceptable in the long run and efforts to redress the shortcomings must be made.

- During the user interviews phase several "users" were contacted who had earlier attempted to use initial deliveries of the Series/1 and who had subsequently discarded the idea. In the same vein some systems houses spoke of initially committing themselves to (for them) large orders and then rescinding, usually as a result of the lack of IBM marketing support.

- Whereas IBM may have excellent reasons for adopting the limited marketing and support approach they have so far provided, the consequences may go further than IBM anticipated. In particular, the Series/1 operation has the IBM name on it, and any lack of success of the product can have wider implications.

- There is every reason to believe, however, that IBM's programme of new hardware and software announcements for the product, already well underway, will correct many of the criticisms of the product, particularly in the areas of larger memories, larger disks and high level languages (COBOL).

- Criticisms of the implementation support will also surely diminish with the growing experience of the IBM personnel on what is, after all, new ground for them. The improvement in marketing support, so crucial to the systems houses, is unlikely to change in the near future.

## F. THE SERIES/1 AS AN EDUCATION TOOL

- Given that IBM is breaking new ground with the Series/1 in :

  - entering, albeit not in force, the minicomputer market,

  - offering a bare bones, do it-yourself kit product, contrary to normal policy,

  - providing initially next to no commercial guidelines to its sales force on where and how to sell it,

  there is speculation that IBM is using the Series/1 as a "toe in the water" - a training tool for its workforce, and a test product for a market where its know-how is not yet fully developed.

- If this is true we can expect to see rapid changes in the Series/1's strategy, in similar fashion to the rapid rate of introduction of new hardware and software already appearing. The Series/1 will then appear in hindsight as a strategic tool for educating IBM and its workforce in the user needs and competitive environment of this crucial minicomputer market.

- The second good reason why IBM should adopt a cautious approach in this new (for it) area is the degree of uncertainty surrounding the whole subject of distributed data processing (DDP) - whether the term is being applied to large organisations who can afford their own networks of systems or to the smaller user. This latter class is already affected by the struggle for his custom between the small-business system vendors (their initial stand-alone approach is soon seen to conceal the follow-on to communications - "to your warehouses, for example") and the RCS vendors, with their proprietary networks, among whom are now appearing the PTTs themselves. (An instance of this new type of supplier is the U.K. Post Office with its viewdata system PRESTEL). Everything that is happening at this end of the market prompts caution to a supplier with as much at stake as IBM.

# IV. ANALYSIS OF FUTURE SERIES/1 USER POPULATIONS

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## A. TODAY'S USERS

- This section is primarily based on an analysis of 60 user installations in the U.K., France, West Germany and Italy, supplemented by discussions with the main competitors in each country market.

- With shipments getting underway, (since February 1978) the ship rate of Series/1 to Western European markets is climbing rapidly. In West Germany, the strongest market to-date, INPUT estimates that the rate had reached thirty five systems by the end of August 1978, climbing to fifty systems per month by year-end. In all, 140 systems per month were estimated to be entering Western European markets in August; this was expected to reach 185 a month by year end, (see Exhibit IV-1).

- Despite this rapid build-up, comments from systems houses indicate that this rate is below IBM's market plan. In particular the 265 systems installed across Europe at end of August was much lower than expected. By year-end INPUT estimates that there will be slightly less than 1000 systems installed in Western Europe. (Note : In extrapolating the orders and shipments totals for West Germany, France, the U.K. and Italy to a Western Europe total, it has been assumed that the "big four" account for 80% of the total).

EXHIBIT IV-1

## IBM SERIES/1 1978 ORDERS, INSTALLATIONS AND SHIP RATE

## WESTERN EUROPE

| COUNTRY | ORDERS | | INSTALLED | | ESTIMATED MONTHLY SHIP RATE | |
|---|---|---|---|---|---|---|
| | 31/8/78 | Y/E | 31/8/78 | Y/E | 31/8/78 | Y/E |
| WEST GERMANY | 650 | 900 | 60 | 230 | 35 | 50 |
| FRANCE | 500 | 700 | 50 | 190 | 30 | 40 |
| U.K. | 380 | 550 | 40 | 150 | 25 | 30 |
| ITALY | 300 | 450 | 50 | 140 | 20 | 25 |
| ALL OTHER | 420 | 700 | 65 | 230 | 30 | 40 |
| TOTAL | 2250 | 3300 | 265 | 940 | 140 | 185 |

- The order situation is much harder to calculate since the crucial factor of backlog at year-end 1977 was not available, but is estimated to have been 2250 at the end of August, with expectations of a year end total of 3300 systems.

- Out of the total sample of users interviewed, 44 (or 74%) have 64K of memory on their installed Series/1s. In West Germany, all of those interviewed had this memory size. In Italy, where process control applications were found (contrary to all other countries), one third of the installed sample had 32K - the only country where these small models were found.

- The comparison (Exhibit IV-2) of the configurations on order with those installed points to a resounding success of the IBM strategy of offering "bare bones" configurations : a majority of them are in the 96K memory range, and a high 23% have 128K.

- The repeat purchase factor of current Series/1 users is enormous, with a typical user having two to four systems installed and intentions or firm orders for a further 20-30. These orders are, almost without exception, for commercial applications.

- All known orders of this type are going or have already gone to IBM, not to systems houses/O.E.Ms. The latter must therefore create their own Series/1 business ; it will not fall out from IBM's sales/marketing activities.

- Delivery delays of the Series/1 have been extremely variable within Western Europe, as would be expected of a product that is in its initial shipment year. From country to country, the variance is of a factor 2-3, and within a country of a factor 4. One thing is clear, however : IBM can and will pull out all the stops to match a delivery requirement when necessary.

- In Italy, the average delivery cycle is 5.4 months so far, but varies from 3 months to 7 months. Most installations occurred six months after order.

# MEMORY SIZE OF SYSTEMS INSTALLED & ON ORDER

A.

| INSTALLED | % BY COUNTRY | | | | % TOTAL |
|---|---|---|---|---|---|
| | UK | W.GERMANY | FRANCE | ITALY | |
| 32K | – | – | – | 33 | 11 |
| 64K | 82 | 100 | 66 | 59 | 74 |
| 96K | 18 | – | 34 | – | 11 |
| 128K | – | – | – | 8 | 4 |

B.

| ON ORDER | % BY COUNTRY | | | | % TOTAL |
|---|---|---|---|---|---|
| | UK | W.GERMANY | FRANCE | ITALY | |
| 64K | – | 100 | 37 | 86 | 35 |
| 96K | 69 | – | 52 | 14 | 42 |
| 128K | 31 | – | 11 | – | 23 |

EXHIBIT IV-2

**INPUT**

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- In West Germany, delivery has ranged from 6 months to 12 months, but in the latter cases the machine was not needed earlier. In France the same applies, but six months has been the norm. In both countries the delivery cycle is becoming shorter rapidly.

- In the United Kingdom, some very short deliveries have been found (six weeks). Some of the peripherals seem in short supply e.g. line printer and often the size of the configuration influences the availability of the system (starter kit : 3 months, 96K configuration: 8-9 months). Over the sample of users examined, average delivery was 3.7 months.

- As shown in Exhibit IV-3, the range of applications for the Series/1 is very broad and is in addition to the often considerable effort being made by users in the systems software area. Users have developed PCM peripherals emulators, teleprocessing monitors and a host of specialised I/O routines. Only 27% of the applications found were in the process control area and a further 6% were for network/concentrator functions. Thus two thirds of the Series/1s currently installed are for purely commercial/business applications.

- Nor are the majority of applications new : 52% of them are for off-loading existing equipment. The appeal of the Series/1 is broad, and it is impacting installed systems as well as displacing potential sales for a wide variety of equipment.

- The facility control/power management configuration proposed by IBM was found only in an IBM building - the users have not found this attractive so far.

- The most popular applications are classic business applications :

  - Inventory control
  - Sales Ledger and/or Analysis
  - Warehouse (distribution and control)
  - Invoicing (either as the principal application or as an add-on)

# SUMMARY OF APPLICATIONS BEING DEVELOPED BY END USER RESPONDENTS

| APPLICATION DESCRIPTION | DP* | ** PC | *** NEW | **** OFF LOAD | NUMBER OF USERS |
|---|---|---|---|---|---|
| INTEGRATED ORDER PROCESSING/ PRODUCTION CONTROL/STOCK CONTROL/INVOICING/AP/AR | X | X | X | | 1 |
| INSURANCE BROKING/CLIENT FILE MANAGEMENT | X | | | X | 1 |
| DISTRIBUTED DATA PROCESSING /DB SYSTEM | X | | X | | 1 |
| TEXT PROCESSING | X | | X | | 1 |
| WAREHOUSE (DISTRIBUTION & CONTROL) | X | | | X | 2 |
| INVOICING | X | | | X | 2 |
| INVENTORY CONTROL | X | | X | X | 4 |
| ORDER ENTRY/DATA COLLECTION | X | | | X | 2 |
| PERSONNEL MANAGEMENT | X | | | | 1 |
| AUTOMATED CHEMICAL PRODUCTION | | X | X | X | 2 |

*DP = DATA PROCESSING
**PC = PROCESS CONTROL
***NEW = APPLICATIONS
***OFF LOAD = FROM OTHER SYSTEMS

EXHIBIT IV– 3

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# SUMMARY OF APPLICATIONS BEING DEVELOPED BY END USER RESPONDENTS

| APPLICATION DESCRIPTION | DP* | ** PC | *** NEW | **** OFF LOAD | NUMBER OF USERS |
|---|---|---|---|---|---|
| SALES LEDGER/ANALYSIS | X |  | X | X | 4 |
| TRAVEL TICKET PRINTING/ SEAT RESERVATION | X |  |  | X | 1 |
| TEXTILE PRODUCTION |  | X | X | X | 2 |
| GENERAL LEDGER/AP/AR | X |  | X |  | 1 |
| HOSPITAL PATIENT/BED INVENTORY | X |  |  | X | 1 |
| PAYROLL | X |  |  | X | 1 |
| NETWORK NODE/CONCENTRATOR | X |  | X |  | 2 |
| PETROLEUM/HYDROCARBON REFINERY |  | X | X |  | 1 |
| PREVENTIVE MAINTENANCE (OF PRODUCTION EQUIPMENT) |  | X | X |  | 1 |
| REAL TIME PRODUCTION CONTROL |  | X | X |  | 2 |

*DP = DATA PROCESSING
**PC = PROCESS CONTROL
***NEW = APPLICATIONS
****OFF LOAD = FROM OTHER SYSTEMS

EXHIBIT IV-3 (Cntd)

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- Process control applications have been most prevalent in sector-specific areas such as Textiles (particularly in Italy) and Chemical production. Others include real time surveillance of production equipment for failure prediction, hydrocarbon refining and meat processing. The latter is an interesting integration of process control and standard commercial applications which follows the product from the slaughterhouse to the retail outlet, establishing inventory controls, processing orders, providing weekly production analysis and invoicing/accounts receivable/accounts payable.

- The inhibiting factor in application development has been the low quality of the Operating system (RPS) and PL/1 (a very popular language with the current user base). In each case shortcomings have created delays in implementation; RPS is also bulky and several installations have found that the intended application(s) just would not fit on the memory size they were sold. One distraught user commented: "I bought a 64K machine, was later told I needed 128K, but then learned that the version of RPS handling 128K wasn't available yet".

- Exhibit IV-4 details the support mix for the current base of IBM Series/1. The emphasis on "do-it-yourself" and the market reluctance of IBM to become involved at the system implementation phase are apparent. Three points must be borne in mind, however :

  (i) IBM's pre-sale support (resolving specialist requirements and arranging for third party hardware/software suppliers to get together with the user for the resolution of their particular needs, based on Series/1 as a building block) is quite effective: thus although post-sale effort is low, IBM does offer a measure of support.

  (ii) IBM's "assist" level is already at 21% of requirements.

  (iii) Exhibit IV-4 relates to the early phases of the product's commercial life i.e. system/software houses will be increasingly available for implementation support.

# PROGRAMMING SUPPORT FOR CURRENT INSTALLED SERIES/1

| TYPE OF SUPPORT | W. GERMANY | FRANCE | UNITED KINGDOM | ITALY | All (weighted by installed systems) |
|---|---|---|---|---|---|
| USER ONLY | 40 | 60 | 48 | 43 | 48 |
| IBM ASSIST | 14 | 20 | 18 | 36 | 21 |
| IBM ONLY | – | – | – | 7 | 1 |
| SYSTEMS/ SOFTWARE HOUSE ONLY | 24 | 5 | 4 | 7 | 11 |
| SYSTEMS/ SOFTWARE HOUSE ASSIST | 22 | 15 | 30 | 7 | 19 |

EXHIBIT IV–4

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- The marked, rapid development of software house and system house support in West Germany is slightly overstated in the Exhibit, due to some particularly large orders. Nevertheless, the West German system/software houses have accepted the Series/1 opportunity far more quickly than all other Western European countries : they are present at 46% of the sites.

- It is likely that this overall picture could change quite rapidly (see section VIII). Many of those users who today are using IBM and third party support indicate that they ultimately expect to be autonomous for future programming. More importantly, the IBM Series/1 sale of tomorrow will be to the small unsophisticated user, rather than today's large, self-sufficient 370 user.

- Exhibit IV-5 shows the languages and operating system chosen by the users interviewed.

- The mainstay of current Series/1 programming support is the Assembler language, particularly where special configurations are needed or process control applications are found. This has been universally the case throughout the four countries analysed. In many cases, however, it is due to the absence of the other main favourite : COBOL. In addition, even when the scheduled delivery of COBOL falls before the delivery of Series/1s on order, there are doubts over the ability of users to run it under all the OS support available (RPS, EDX, CPS).

- FORTRAN, given its present availability, is quite popular, particularly in West Germany. COBOL will be at least as popular, however, when it becomes available. Other languages expected from systems houses, both European and US, include RTL/2 (from SPL in the UK), a Series/370 cross compiler (from Royal International Systems, U.S.), a BASIC interpreter (from DSI Inc, U.S.), a PASCAL compiler (from Conversational Systems Corp. U.S.) and an RPG-II compiler (from Series One Inc. U.S.). None of these were alluded to by European users, who obviously are unaware, at this stage, of their existence.

# LANGUAGE/OS SUPPORT USED BY USERS, 1978/79 (SYSTEMS INSTALLED/ON ORDER) % BY SITE

| COUNTRY | LANGUAGES | | | | OS | |
|---|---|---|---|---|---|---|
| | ASSEMBLER | PL/1 | FORTRAN | COBOL * | EDX | RPS |
| UK | 67 | 83 | 17 | 17 | 14 | 86 |
| WEST GERMANY | 78 | – | 35 | 24 | 60 | 40 |
| FRANCE | 85 | – | 15 | 20 | 45 | 55 |
| ITALY | 86 | 14 | 29 | 14 | 14 | 86 |
| ALL | 74 | 26 | 26 | 22 | 28 | 72 |

* – WHEN AVAILABLE

EXHIBIT IV- 5

INPUT

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- Running COBOL on the Series/1 may require more than just software: the Series/1 does not offer string handling operations. To avoid slow execution of compiled code, Advanced Software Products in the U.S. is offering a microprogrammed attachment card (COBOL accelerator board).

- The following alternative operating systems are also available from U.S. systems houses :

| PRODUCT | GOAL | VENDOR | PRICE |
|---|---|---|---|
| COS/1 | for COBOL business applications | COMPUDATA SYSTEMS | $11,500 |
| SPUTNIC | teleprocessing CICS equivalent | Series/1 Small Business & Communications Systems Corp. | $ 3,500 |
| MIIS | on-line DBMS for medical applications MUMPS equivalent | Medical Information Technology Inc. | $ 4,000 approx. |
| OS/1 | clustered terminal/ 3270 emulation support | DDP Products Inc. | $ 5,000 |

As already mentioned, users are also doing their own thing, particularly in the telecommunications area, rather than wait for systems house or IBM support.

## B. THEIR REASONS FOR BUYING AND THE COMPETITION CONSIDERED

- The main reasons for choosing IBM relate to IBM's size and reputation, on the one hand, but also to the Series/1 price and modularity. Users like the hardware packaging IBM has adopted. However, where the product, its software or IBM's support are not adequate, users are quick to point out that they are confident that IBM will correct the deficiencies. This confidence element is far more important than actual product performance.

- Company policy and IBM's market coverage also generate a number of sizeable sales; the former because the IBM policy is usually found in big companies, the latter because only very large companies are present on an international scale and frequently require 20-30 systems at a go.

- Users declared reasons for buying include:

    - "The IBM name"

    - "Good price/performance"

    - "The Series/1 is ideal for a mix of process control and general business"

    - "We've got a large IBM installation, and the more you spend with IBM, the better the service gets"

    - "It is company policy to choose IBM"

    - "We're present over a wide area in this country, and in many foreign countries as well; so's IBM"

    - "The Series/1's modularity".

- Series/1 impact on the other manufacturers has been widespread but not severe. This is largely due to the product's main market target (IBM 370 installations) so far. Over a sample of some 230 systems installed, the loss of prospective sales are examined in Exhibit IV-6. The percentages are small and widespread, which explains why so few of the competitors have perceived the Series/1 as a threat yet.

- The significance of being near the top of the table in Exhibit IV-6 is twofold :

  - it signifies a large number of systems lost (percentage lost multiplied by 230)

  - it means that the vendor came close in contention with the Series/1.

  Thus, while it may be disappointing to lose many sales, those at the bottom of the Exhibit should not be satisfied with the fact that they were not often in contention.

- The reasons for and against the IBM Series/1, in the users eyes are very varied and in some cases contradictory, but they can be summarised as follows:

  - FOR: the IBM name and the modular architecture

  - AGAINST: bulky/poor quality (or non-existent) software and below par support.

- A selection of user's comments concerning these aspects is given in Exhibit IV-7. One particular aspect that has worried a lot of users is the fact that U.S.-developed software, supposedly already debugged through its use on the US market, is not performing to specification (particularly RPS and PL/1). Problems with PL/1 could cause serious problems in the UK market where a very high 83% of the users interviewed are already using it or intend to use it, (see Exhibit IV-5).

EXHIBIT IV-6

## SAMPLE OF COMPETITORS PROSPECTIVE SALES LOSSES DUE TO INSTALLED SERIES/1

| | MANUFACTURER | NUMBER OF SYSTEMS | % OF TOTAL LOSSES (ROUNDED) |
|---|---|---|---|
| 1= | NIXDORF | 30 | 13 |
| 1= | SPERRY UNIVAC | 30 | 13 |
| 3 | DEC | 26 | 11 |
| 4 | HEWLETT PACKARD | 25 | 11 |
| 5 | MAI (BASIC FOUR) | 23 | 10 |
| 6 | NCR | 22 | 10 |
| 7 | VENTEK | 19 | 8 |
| 8 | SIEMENS | 12 | 5 |
| 9 | HONEYWELL | 10 | 4 |
| 10 | OLIVETTI | 9 | 4 |
| 11= | DATAPOINT | 8 | 3 |
| 11= | MDS | 8 | 3 |
| | OTHERS (LOGABAX, GEA, T.I., TELEX) | 8 | 3 |
| | TOTAL | 230 | |

## C. FORECAST OF FUTURE SERIES/1 SALES

- Exhibit IV-8 shows INPUT's forecast for Western European installations of Series/1 for 1978 through 1983. The projections are grossed up from summaries derived for each of the four major country markets.

- The four major countries have been estimated to account for some 80% of the total market. Therefore an extra 20% plus has been added to allow for all other countries.

- In assessing the potential offered by the Series/1 and forecasting orders, shipments and the installed base through 1983, in each major country and in Western Europe as a whole, it was felt that this was most conveniently done on a unit system basis rather than value basis, because it is :

  - the most important unknown in establishing market potential for add-on memory/peripherals, software and systems support

  - independent of small price changes over the years (increase or decrease), whereas a dollar volume forecast is highly sensitive to these same changes

  - more easily related to establishment populations for calculations of relative penetration of each country market

  - easy to use for developing dollar volumes for all aspects of the Series/1 market.

- From shipments worth $46.3M in 1978, the Series/1 will grow to a $1.04B market by 1981, declining to a $412M market by 1983. The basic assumptions made for this forecast are that :

## WHAT DO YOU LIKE ABOUT YOUR SERIES/1 ?

### BEST

- "Flexibility of the hardware : it will match our needs for the next five years".
- "Price, fast processing".
- "The hardware ; its public property. Anyone who wants to hook up their equipment can".
- "Modular architecture ; il allows us to control what our subsidiaries can do, according to their particular configurations".
- "The IBM name : it saves me having to convince my management of the need to choose this product".

### LEAST

- "New product, not yet established".
- "Lack of back-up capacity".
- "Poor support from IBM".
- "Quality of US software is not that hot ; most is on test before delivery".
- "Maintenance and support are below par with respect to IBM 370".
- "Promised software not available or incomplete".
- "I can't really use the 64K I was sold and I can't get the operating system to handle a larger memory yet".

EXHIBIT IV-7

  - IBM will not begin to seriously impact the minicomputer market until late 1979/early 1980 (concentrating on the "370 defense" strategy until then)

  - initial response to this attack will be forthcoming from the other minicomputer vendors in mid 1980, but effective measures capable of overcoming the IBM name advantage (as opposed to the Series/1 product price/performance) will not be fully available before 1981

  - IBM will continue to enhance the Series/1 through 1982, when a replacement will be available, at which time sales will decline rapidly (self-impact).

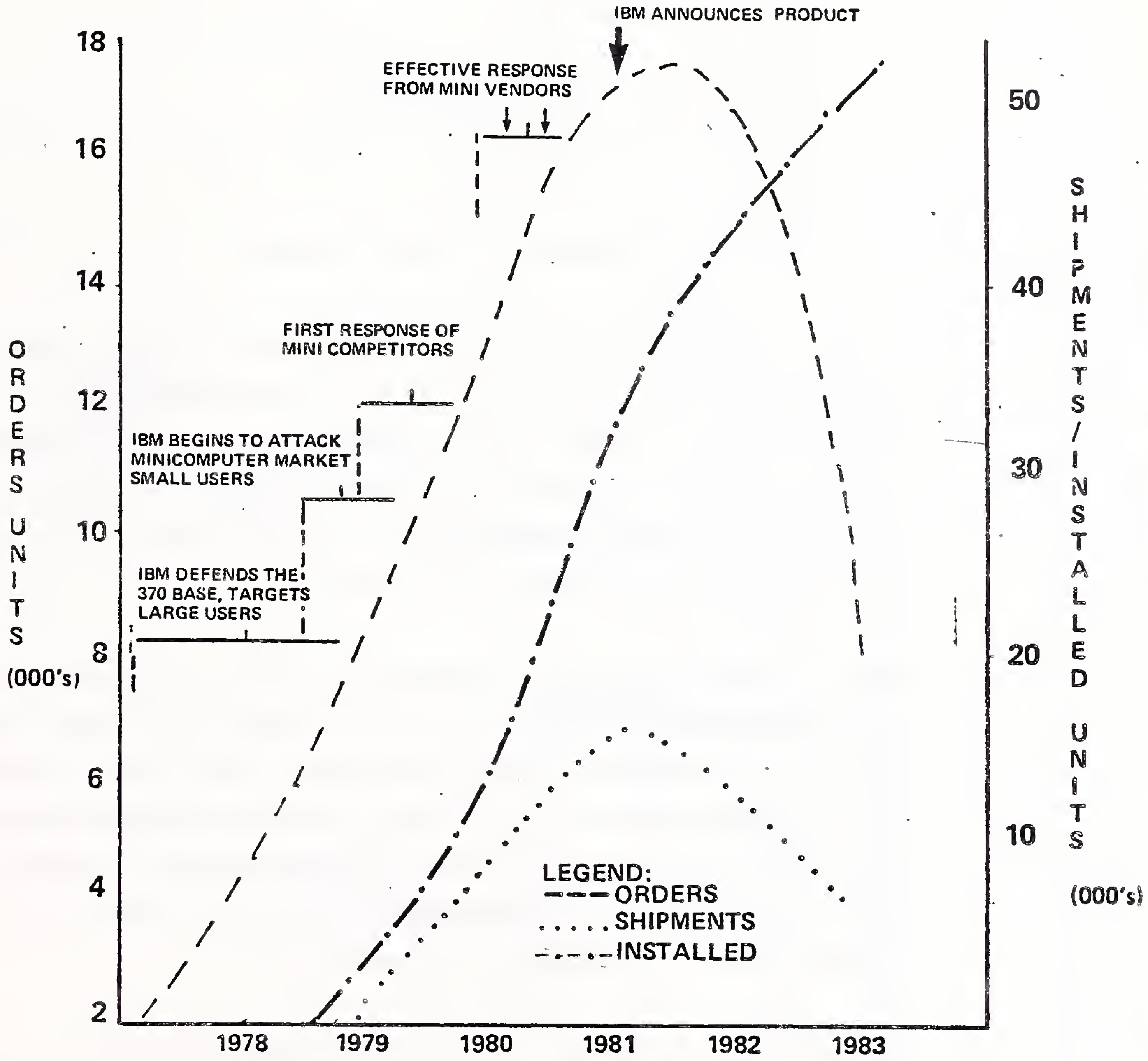
- Cumulative gross shipments are over 56,000 units on the six years period, almost 88% of which are from sales by IBM. By 1981, cumulative shipments will total 36,000 (40% of shipments in the US). This is due to (i) a year's delay in launching the Series/1 in Europe (ii) the lack of adequate marketing support.

- Of these shipments, the following requirements will be satisfied by plug-compatible products in competition with IBM on shipments from 1978 through 1981 :

  - Main Memory : 5% of requirements or $11.8M
  - Disk Drives : 15% of requirements or $75.0M
  - Tape Drives : 10% of requirements or $ 9.7M
  - Line Printers : 10% of requirements or $18.3M
  - VDUs : 20% of requirements or $50.6M

- In assessing the opportunities for service vendors created by the impact of Series/1 as forecast, it is necessary to set it into the context of the overall future pattern of computer usage. Initial sales of Series/1 have been targetted to the larger 370 users, but increasingly smaller users will consider Series/1 as GSD starts to undertake sales.

# ORDERS, SHIPMENTS & INSTALLED BASE FORECASTS FOR WESTERN EUROPE (1978-1983)



YEAR END:

| | | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|---|
| UNITS | INSTALLED: | 940 | 5400 | 16,800 | 36,000 | 49,000* | 56,000* |
| | ORDERS: | 3300 | 7700 | 14000 | 17100 | 13,400 | 7,500 |
| | SHIPMENTS: | 940 | 4460 | 11,400 | 19200 | 13,500 | 7,600 |
| % | OEM: | 9 | 13 | 14 | 13 | 11 | 9 |
| | IBM: | 91 | 87 | 86 | 87 | 89 | 91 |

* NET OF RETURNS

EXHIBIT IV - 8

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- It is in the area of small to medium sized businesses that Series/1 will be in contention with :

  - DEC's PDP 11/34 and its upgrades below the 11/70
  - HP's new 300 series
  - DG's Nova 4 and bottom end Eclipse machines
  - Philips, Nixdorf and Olivetti SBCs
  - Other US mini-computers e.g. Basic Four, Harris, Four Phase, Datapoint
  - eventually, perhaps also Japanese minis.

- INPUT's estimate of the total minicomputer shipment status for Western Europe to 1981 is shown in Exhibit IV-9. In general IBM is expected to have captured less than 5% of 1978 shipments, but to increase this rapidly to 15% by 1981. The main competitors predicted to suffer from this increase are DEC, HP and all the others except DG. This was predicted by INPUT in 1977 and is borne out by the figures shown in Exhibit IV-6.

- DEC as market leaders, at approximately 38% of the mini market total are impacted by all newcomers and cannot expect to increase their share until further rationalisation of this market sector takes place. With the emphasis on data processing over the next 5 years being increasingly focussed on DDP and with the newly burgeoning office computer market, the mini solution will remain an option in so many instances that it is unrealistic to expect the market sector to settle during this period.

- HP like IBM are often selected by users who are prepared to pay a premium for reliability and service. In future therefore HP must expect to be in contention with Series/1.

- DG are rated the most aggressive of the mini vendors and are predicted to increase their market share in the period.

FORECASTED NUMBER OF MINICOMPUTERS
SHIPPED (1978-1981) IN WESTERN EUROPE

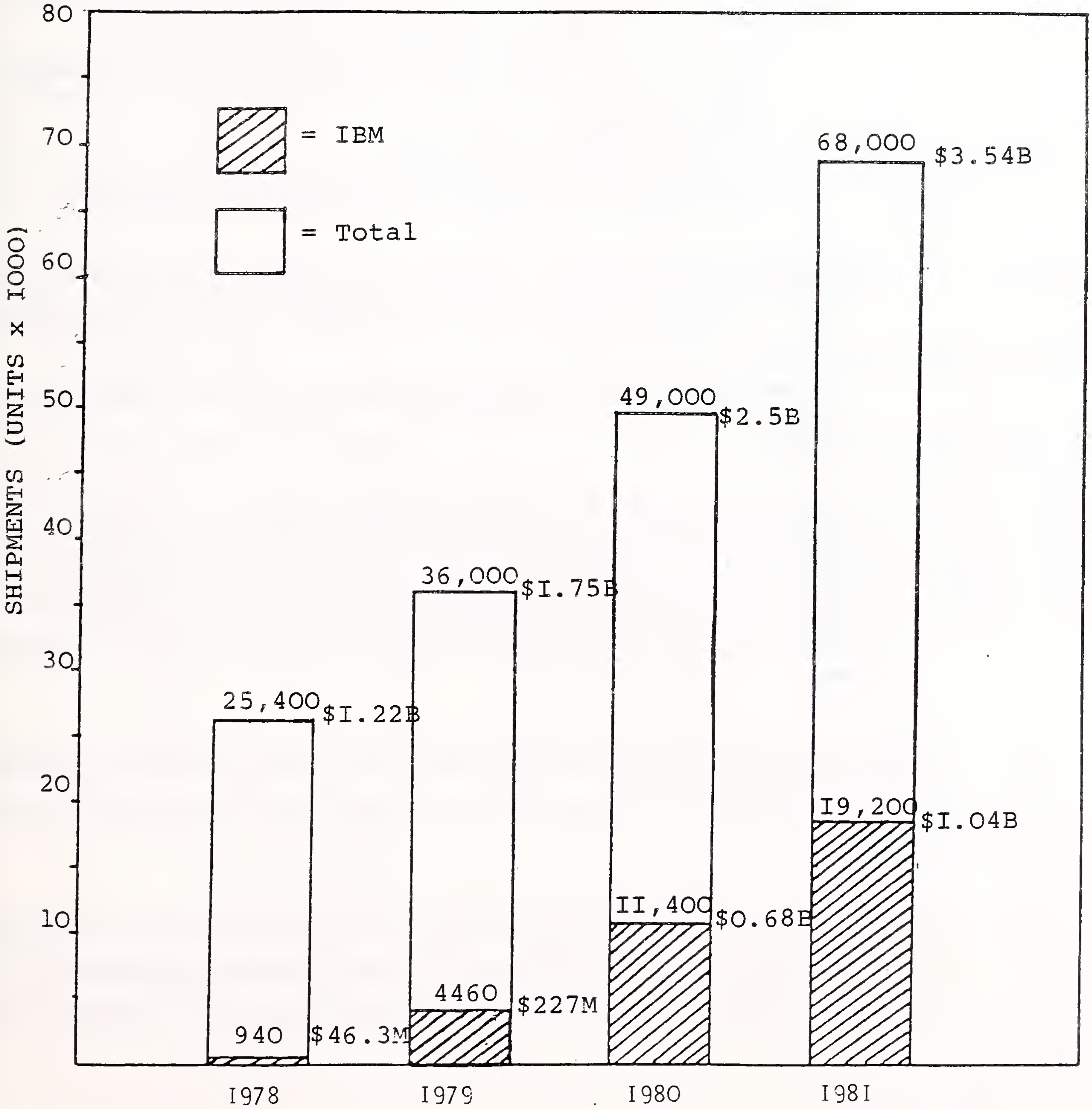

EXHIBIT IV-9

## D. ANALYSIS OF FUTURE SALES BY APPLICATION

- Exhibit IV-10 gives INPUT's estimate of the future uses to which IBM Series/1 will be put for the period 1978 through 1981. It is based on the applications found during the survey to be in course of development for existing users. The following assumptions have been made for the purposes of extrapolation

  - four broad categories of use can be identified for the series : systems for existing users including replacement, off loading and DDP,
    - first-time users' small business systems including subsidiaries of larger groups,
    - pure data communications uses,
    - process control and other scientific/real-time applications,

  - whereas initially Series/1 has been sold mainly to experienced users, first-time users will grow to being the largest proportion (40% by 1981),

  - process control applications will decline from 27% in 1978 to 20% by 1981,

  - though these categories are not mutually exclusive, it is fair to give each system a main use category. Multi-purpose installations will mainly occur as overlap between the first and last categories i.e. process control with general commercial applications for an existing user.

- While firm projections for individual applications cannot be made it is possible to make predictions on the general level of opportunity which exists for each category.

- Existing users (i.e. with their own mainframe or mini) are currently replacing non-compatible equipment with Series/1 or else off-loading applications performed inefficiently if centralised. For example, the data entry market is now

FORECASTED SERIES/1 INSTALLATIONS BY MAIN APPLICATION CATEGORY

(PERIOD 1978 - 1981)

| | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | % | NO. | % | NO. | % | NO. | % | NO. |
| EXISTING USERS E.G. DDP | 52 | 489 | 32 | 1428 | 25 | 2850 | 20 | 3840 |
| FIRST-TIME SBC SYSTEMS | 15 | 141 | 30 | 1338 | 35 | 3990 | 40 | 7680 |
| DATA COMMUNICATIONS | 6 | 56 | 13 | 579 | 17 | 1938 | 20 | 3840 |
| PROCESS CONTROL ETC. | 27 | 254 | 25 | 1115 | 23 | 2622 | 20 | 3840 |
| TOTAL | 100 | 940 | 100 | 4460 | 100 | 11400 | 100 | 19200 |

EXHIBIT IV - 10

experiencing attack from mini vendors and software houses with products sold on the added flexibility which the local processing power of the general purpose mini brings to data entry. Intelligent terminals are another instance where Series/1 can be price competitive with the purpose-specific RBT and with the other mini offerings. Both these applications are modules of a data processing manager's total function which can be easily identified for purposes of transfer to mini-based equipment. Series/1's modular packaging attracts this type of user. There is thus a market for existing software products (e.g. Informatics Series IV) to be transferred to Series/1.

- Earlier it was shown how IBM has limited self-impact in the DDP area by the manner in which Series/1 has been brought to the marketplace. Since INPUT surveyed European users in 1978, IBM has added another member to the System/30 range - the System/38 starting at around $140,000 for a four workstation configuration - and also introduced the 8100 range as a DDP satellite processor offering. The way is still open, however, for the systems houses to offer price competitive solutions for DDP based on Series/1, so long as they are prepared to do their own marketing, selling and particularly pre-sales support. Particular targets which should be identified are those organisations where a mix of business and technical applications will be required. Here Series/1 would score over the total commercial orientation of both of IBM's alternative solutions. This is more likely to occur in manufacturing and process industries in medium sized companies where the cost/benefit analysis cannot justify two separate installations (one for each type of application) at the site of a remote manufacturing plant.

- First-time SBC system users will represent the largest percentage of Series/1 users by 1981. This is because of the sheer number of such users. Included in this category are both users of bureaux and those still operating manual systems. INPUT's estimate of the number of organisations in Western Europe who do not have an in-house installation is shown in Exhibit IV-11. It has been based on a recent (1978) survey of top companies in the UK and has been modified to indicate that one would expect a lower percentage of larger companies to be without in-house equipment. Obviously, the great mass of

ESTIMATED NUMBERS OF USER ORGANISATIONS WITH IN-HOUSE FACILITIES

| IN-HOUSE FACILITY / COMPANIES | WITH NO INSTALLATIONS | | 1 INSTALLATIONS | | 2 INSTALLATIONS | | 3+ INSTALLATIONS | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|
| | % | NO. | % | NO. | % | NO. | % | NO. | % | NO. |
| TOP UK COMPANIES | 27 | 405 | 40 | 600 | 18 | 270 | 15 | 225 | 100 | 1,500 |
| ALL UK COMPANIES | 65 | 429,000 | 30 | 196,000 | 5 | 33,000 | <1 | 2,000 | 100 | 660,000 |
| ALL WESTERN EUROPE | 65 | 2,145,000 | 30 | 990,000 | 5 | 165,000 | <1 | 11,000 | 100 | 3,300,000 |

EXHIBIT IV - II

organisations are very small businesses, who will not be able to justify even a mini computer installation and must enter at the next level down with a very small system to be based on the new generation of micro-based "personal computer"products.

- However, just above this lowest level there remains a vast untapped source of business for the mini vendors and service companies in the large number of small businesses who are not at present users of processing power. Exhibit IV-12 quantifies these according to size of turnover and also shows the number of establishments estimated to be supported by each size of organisation. This gives a measure of the dispersion of the companies' activities and thus their requirement for communications and DDP.

- Of the Series/1's installed base of 56,000 at year end 1983, approximately 13,000 (or 23%) are expected to hit first time users. This amounts to 2% of the target number of organisations in the "Small" category on Exhibit IV-12, whereas the cumulative total of mini shipments to W. Europe is expected to be about 200,000 by that time (or 31% of the same target).

- Process Control and other like technical applications e.g. telemetry and telecontrol, energy management, are predicted to plateau out at 20% in year 1981. Three reasons are given for this :

    - once Series/1 sales become fully a branch function technical applications will lose the appeal which they held for the initial central sales function, who had historically placed System/7s into similar requirements,

    - some technical uses of Series/1 will be secondary to the business applications on the same site, a point which highlights Series/1's versatility,

    - IBM is not specially favoured by users for engineering applications, and IBM's share of this market sector will get to be only slightly above IBM's share of the mini market at the time of the launch of Series/1 (i.e. 2% then will rise to 3% of the total mini market).

## WEST EUROPEAN ORGANISATIONS AND THEIR ESTABLISHMENTS BY SIZE

| TYPE BY SIZE | WITH 1978 TURNOVER PER ANNUM ($ MILLION) | | | | | | |
|---|---|---|---|---|---|---|---|
| | < 0.2 | 0.2-2.0 | 2.0-20 | 20-200 | 200-2000 | > 2000 | ALL |
| | VERY SMALL | SMALL | MEDIUM | LARGE | VERY LARGE | GIANT | |
| NO. OF ORGANISATIONS IN SIZE RANGE (M = MILLION) | 2.5M | 650,000 | 150,000 | 10,000 | 500 | 32 | 3.3M |
| NO. OF ESTABLISHMENTS SUPPORTED | 3.0M | 1.5M | 800,000 | 180,000 | 30,000 | 10,000 | 5.5M |

EXHIBIT IV - 12

- Series/1 will be favoured for technical applications in companies with a total "buy IBM" policy. This factor will cause the majority of these sales to be with the large users.

- The recent addition of a bottom-end processor (the 4952) and low-cost tape drives enhances the equipment's suitability for data logging and other unattended-site uses. The public utilities and off-shore exploration companies are therefore an attractive target now for such systems.

- The data communications category is one of growing importance for Series/1, -up from 6% of sales in 1978 to 20% by 1981. This classification is designed to cover pure data communications uses and to exclude mixed situations where local processing is interspersed with batch transmission to mainframe. (These latter have been included in one of the two user-specific categories). It therefore includes :

    - use as RBT,
    - front-ending,
    - concentrators for low and high speed lines,
    - packet-switching nodes,
    - interprocessor linkage,
    - control of mixed vendor processors for instrumentation.

- This application area is a fertile source of business for systems houses with telecommunications and data communications experience. It is inadvisable for houses without the requisite experience to enter this sector, unless their entry is adequately prepared. Because of the large rewards, it is likely to be one of the most competitive sectors in the forecast period with RCS vendors as well as systems houses engaged actively in it.

# V. COUNTRY MARKET FORECASTS

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- In preparing the country level forecasts, in addition to the assumptions made in section IV-C.,the following were added concerning the orders, shipments and installed base :

  - current early orders are indicative of the level of acceptance by users of the product and determine the shipment profile of 1979.

  - IBM will continue to expand the Series/1 in hardware and systems software.

  - In each country IBM, the users and the systems/software houses will produce applications software in quantity and variety to surpass the software available from any single minicomputer model from any other vendor.

  - The development of the Series/1 initial market impetus will continue without any significant competitive reaction to 1980, due to the lack of conviction by the minicomputer community that the Series/1 will impact them ; by the time the significance of the product is realised the Series/1 will (a) be an established product and (b) have a vastly expanded profile to that of today.

  - All systems in the backlog at year-end are shipped in the next year, and the backlog is cleared in (i) 5 months in 1979 (ii) 6 months in 1980 (iii) 7 months in 1981, (the peak shipment year). Thus the level of the backlog determines shipments to a large extent.

- The volume of unit shipments indicated includes all applications of the Series/1, i.e. :

  - commercial applications
  - process control and scientific applications
  - controller functions (particularly data entry/collection)
  - network node and front end
  - remote batch terminal/satellite processor.

## A. GROWTH OF SERIES/1 SHIPMENTS AND INSTALLED BASE

- Today's Series/1 has a number of considerable problems in reaching the marketplace :

  - support staff is rare and inexperienced

  - some basic software is inadequate or not yet available (i.e. the 128K O/S)

  - the software that is available is sometimes of doubtful quality (e.g. PL/1)

  - availability of some of the hardware elements is sporadic (e.g. 5 months for the line printer as against as little as 3 weeks for the starter kit).

- But the overriding consideration for the Series/1 is that the users are excited about its possibilities and are convinced that "it will all come right in the end". This is a leeway not often accorded to other vendors, the value of which, in market development terms, is inestimable.

- Forecasting the penetration in each country market, therefore, is an unusual task, in that normal product acceptancy limitations and market resistance do not apply. That the product has problems is not disputed by users ; they are very critical but these same problems are not in anyway a deterrent to the product's success.

- The country forecasts that follow are therefore subjective and based largely on INPUT's "feel" for the product's potential, developed in talking to the early users of the product, and enhanced by the basic assumptions made above and earlier (replacement product, competitive response). The orders, shipments and installed base forecasts have been related, in each country, to the installation support mix currently found. The projections are by users (to 1980) and INPUT (to 1983).

- No limitation has been placed on the sectorial penetration of the Series/1: current shipments have shown that the scope of the product is unlimited in applicational terms, and what it lacks today will be available tomorrow.

## B. MARKET IN WEST GERMANY 1978-1983

- The Series/1 has spread rapidly into many applications in West Germany. Foremost among these are :

  - Wholesale distribution (Photo wholesalers, Chemicals, Pharmaceutical, Tobacco, Food)

  - Local Government

  - Manufacturing (particularly warehouse control)

- In most cases the basic requirements is that of distributed processing. The applications running on current installed Series/1s are straightforward: order processing, invoicing and inventory control. In the case of an important local government contract, in addition to the local processing for the township, there will be a tie-in to the central host computer at the state (Land) level.

- The significant feature of the West German market, compared with the other markets analysed, is the independence and maturity of the users: they intend to decrease their reliance on outside services as soon as possible. There are instances of some very large turnkey installations, but here again the users plan to develop their own in-house expertise.

- The support required from IBM is therefore forecast to be far lower than in other countries, either as the sole source of programming support or as an assist to in-house staff.

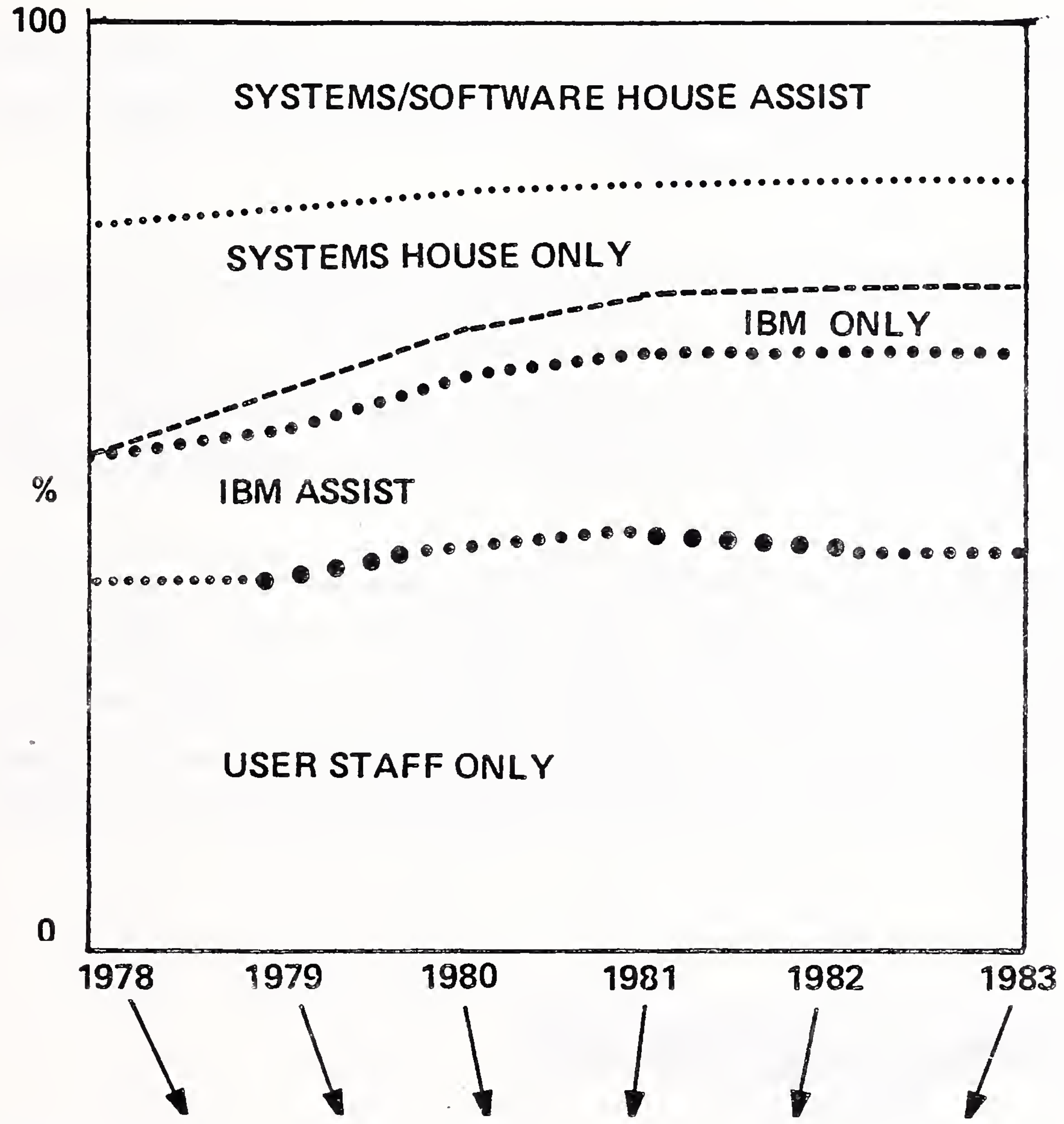
- On the systems house turnkey front, INPUT expects the volume of business to grow substantially. However, given the limit of available manpower, in percentage of installed systems this will mean a decline from 1978's high level. In number of systems, the volume will grow from 55 in 1978 to 660 by 1981.

- As to the assistance expected from systems/software houses in complementing the user staff's own programming, this also will grow in terms of first-time applications. Once the users are off the ground, however, the demand for repeat assistance will drop off rapidly.

## ORDERS, SHIPMENTS AND INSTALLED BASE FORECASTS

- West Germany is the Series/1 market with the most potential, mainly due to the maturity of the German user, in terms of his self-sufficiency in software/programming developments. In addition, the West German market is a disciplined one, which has a tendency towards tight standardisation. In this manner, an application, once developed, can be broadly applied with limited modification.

# FORECASTED INSTALLATION SUPPORT MIX WEST GERMANY, (1978-1983), % of systems installed.



| | | | | | | |
|---|---|---|---|---|---|---|
| S/S/H: | 22 | 20 | 28 | 27 | 27 | 27 |
| SYS: | 24 | 20 | 15 | 12 | 12 | 10 |
| IBM-O: | – | 4 | 5 | 6 | 7 | 7 |
| IBM-A: | 14 | 16 | 18 | 20 | 21 | 23 |
| USER: | 40 | 40 | 44 | 45 | 43 | 43 |

EXHIBIT V - I

**INPUT**

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- Orders are expected to reach 900 by year-end 1978, growing to a peak of 5000 in 1981. These will contain a high percentage of repeat purchases, from existing Series/1 users, particularly those implementing distributed data processing.

- Shipments, expected to reach 230 by year-end 1978, will increase rapidly in 1979 and more than double again in 1980. The peak shipment year is expected to be 1981 with 5500 systems.

- While Exhibit V-2 shows O.E.M. shipments decreasing in percentage terms, the actual volume will, of course, increase sharply to a peak of 715 systems in 1981. Thereafter the systems house's attention will begin to center on the new announcements, leaving the Series/1 business to gradually decline.

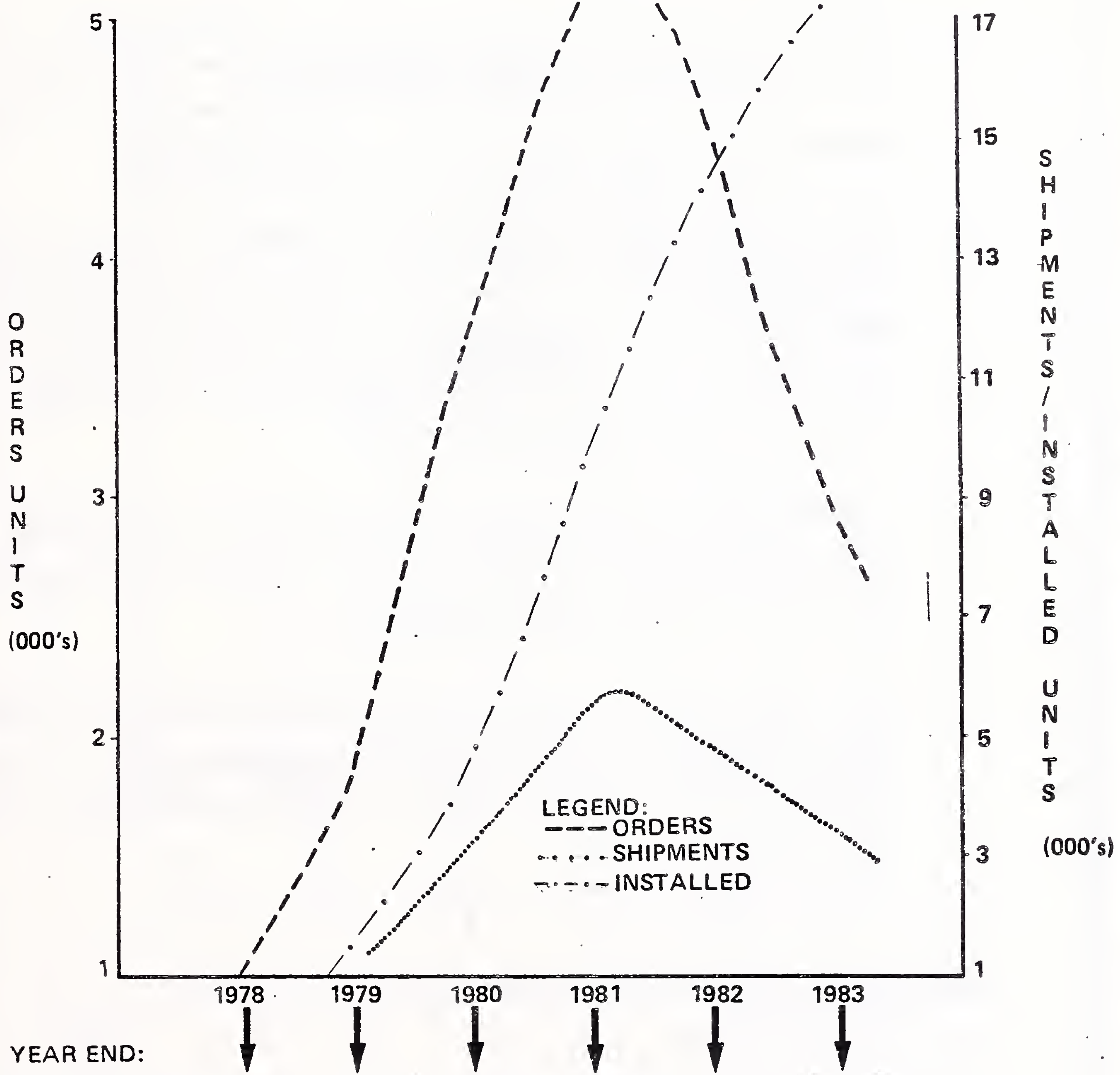
- The German market is arguably the best prepared for implementing distributed data processing concepts, while maintaining a high degree of site independence. The Series/1 is highly suited to the EDP needs of the single establishment, with its combined business/process control capability together with simple standard communications facilities for their interconnection when needed.

## C. THE FRENCH MARKET (1978-1983)

- The French market is difficult to characterize, since user opinion is so much more difficult to come by than it is in all of the other countries (reluctance to respond to questionnaires in general) and even when opinions are given, they usually represent a policy pronouncement to the outside world, rather than a frank, reasoned indication of satisfaction, dissatisfaction, intentions etc. Very few users agreed to their names being used.

- It is necessary to caution the readers, therefore, that what follows is the picture that emerges from the interviews, which may be slightly distorted by "policy" statements.

# ORDERS, SHIPMENTS & INSTALLED BASE FORECASTS FOR WEST GERMANY (1978-1983)



YEAR END:

| | | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|---|
| UNITS | INSTALLED: | 230 | 1450 | 4650 | 10100* | 14,200* | 16,800* |
| | ORDERS: | 900 | 2000 | 3800 | 5000 | 3900 | 2600 |
| | SHIPMENTS: | 230 | 1220 | 3200 | 5500 | 4200 | 2800 |
| % | OEM: | 17 | 15 | 16 | 13 | 11 | 10 |
| | IBM: | 83 | 85 | 84 | 87 | 89 | 90 |

* NET OF RETURNS

EXHIBIT V - 2

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- At the end of August 1978, 60% of the systems installed were being implemented by the end-users themselves, and a further 20% with the assistance of IBM. None were found that were being entirely programmed by IBM. (see Exhibit V-3).

- Systems and software houses assistance accounted for a further 15% but very few were being implemented on a turnkey basis; the contracts concern specific, single applications, often of a specialised nature.

- This situation is not expected to vary considerably, with the exception of the end-user autonomy. The proportion of systems programmed solely by the end-user is expected to drop from 60% in 1978 to 35% by 1983, due largely to a 40% increase in the assistance provided by IBM and an increase in the number of systems requiring hand-holding by IBM.

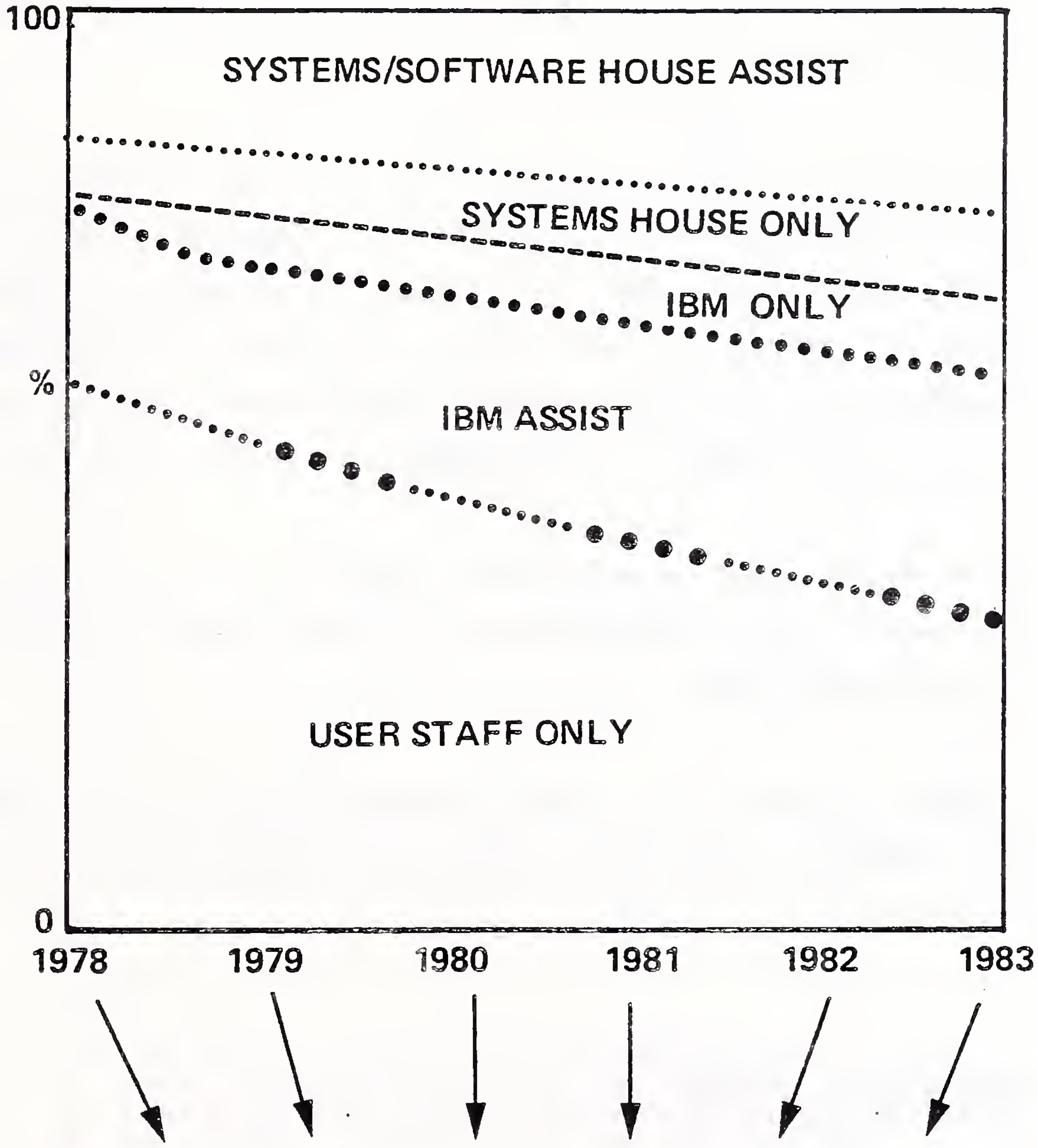
- Turnkey systems are not expected to cover more than 10% of the installations, in any one year, for a cumulative total of a little over 1400 system shipments (8%) over the six year shipemnt period.

- System and software houses will be providing assistance to between 15 and 20% of shipments per year, or for a cumulative total of more than 3200 systems. IBM and the user will be installing between 80% (1978) and 70% (1983) together.

## ORDERS, SHIPMENTS AND INSTALLED BASE FORECASTS

- France is a prime European market for any IBM product, second only to West Germany, and the IBM Series/1 is not expected to be any different. Indeed, the modular architecture of the Series/1 and the wide-ranging requirements of the French market go well together and should prove a profitable combination for IBM.

# FORECASTED INSTALLATION SUPPORT MIX FRANCE, (1978-1983), % of systems installed



| | | | | | | |
|---|---|---|---|---|---|---|
| S/S/H: | 15 | 16 | 17 | 18 | 19 | 20 |
| SYS: | 5 | 6 | 7 | 8 | 9 | 10 |
| IBM-O: | – | 5 | 6 | 7 | 7 | 7 |
| IBM-A: | 20 | 23 | 25 | 27 | 27 | 28 |
| USER: | 60 | 50 | 45 | 40 | 38 | 35 |

EXHIBIT V - 3

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- Orders at the end of August 1978 stood at 500 and are expected to compare to 700 by year-end. By 1981 orders will have grown to 3600, declining thereafter to 1500 by 1983.

- Shipments follow suit, with the 1978 total of 190 systems improving rapidly to 960 in 1979 and expanding to 4340 by 1981. Installed systems will peak at 12,000 by year-end 1983.

- By 1980, the majority of sytems will be going into less autonomous end-users, who will need a measure of assistance for programming their applications. By then, however, the range and variety of application software available from IBM, the software houses and other users will have grown to significant proportions (over 3600 systems installed) and much of the basic softwaare requirements needed for the expansion of 1980-1983 will be on the market.

- Thus while IBM's committment to assisting end-users will inevitably grow, it will not be needed to the extent that other vendors would have to face, due to this flywheel effect.

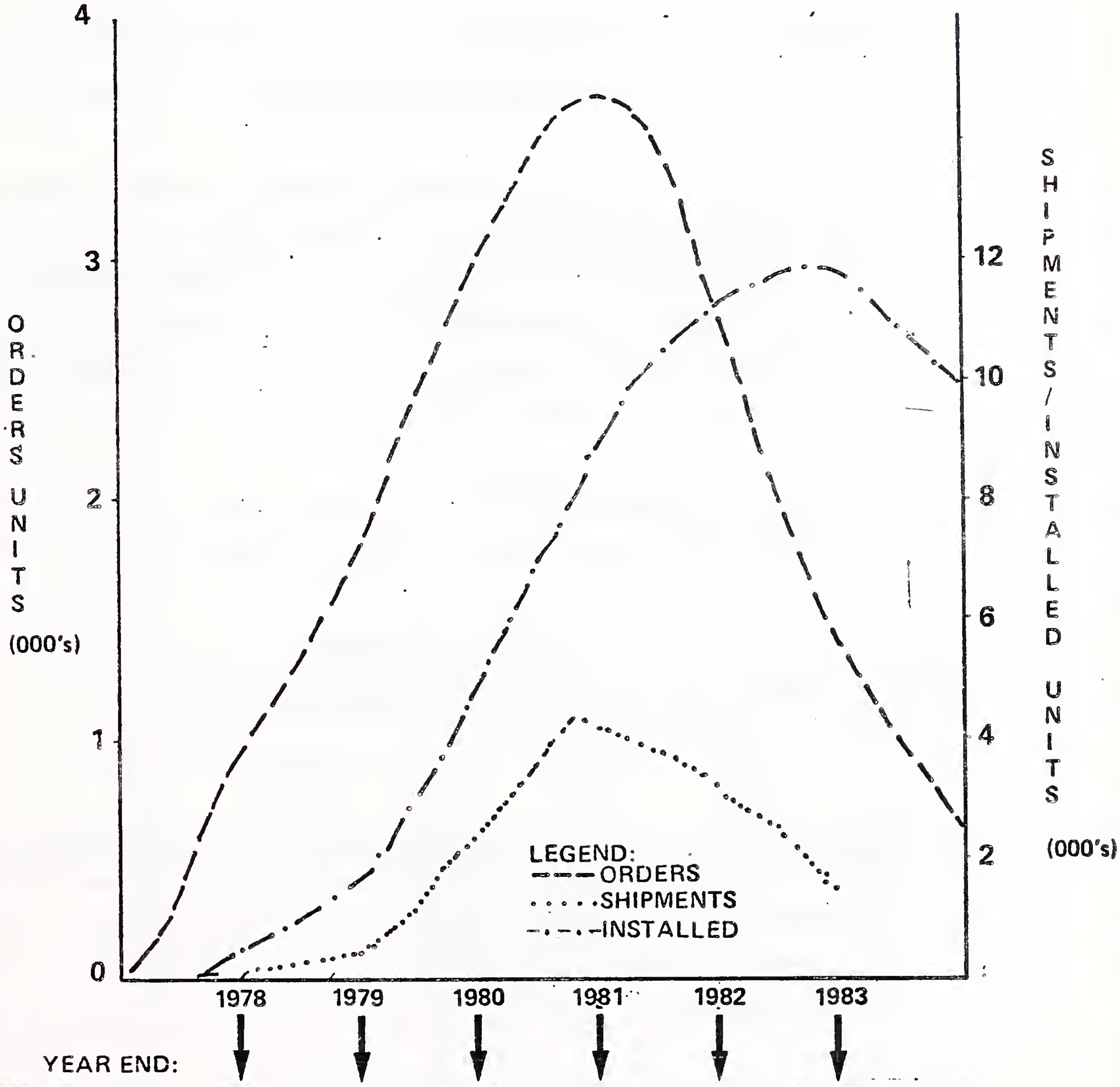
- In this way, IBM's goal of reduced involvement with the implementation side of the Series/1, begun with the product's launch, will be able to be continued throughout the product's commercial life.

## D. THE MARKET IN THE UNITED KINGDOM (1978-1983)

### INSTALLATION SUPPORT MIX

- The survey of UK Series/1 users showed that two thirds of the software for the initial systems was developed by the end-users themselves, either alone or with IBM's assistance. IBM has not yet offered to implement the Series/1 for the user, but this will undoubtedly occur over the next few years for selected important accounts.

# ORDERS, SHIPMENTS & INSTALLED BASE FORECASTS FOR FRANCE (1978-1983)



| | | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|---|
| UNITS | INSTALLED: | 190 | 1150 | 3660 | 8000 | 10,900* | 12,000* |
| | ORDERS | 700 | 1600 | 3000 | 3600 | 2900 | 1500 |
| | SHIPMENTS: | 190 | 960 | 2510 | 4340 | 3,000 | 1250 |
| % | OEM: | 15 | 18 | 17 | 16 | 12 | 10 |
| | IBM: | 85 | 82 | 83 | 84 | 88 | 90 |

* NET OF RETURNS

EXHIBIT V - 4

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- Exhibit V-5 shows the developments that are expected in each support category over the next five years. User implementation with or without IBM assistance is expected to take care of half or more of the installations, decreasing from 1978's 66%.

- IBM software developments for key accounts are expected to grow from 5% to 10% of shipments, or a little under 700 systems over the five year period.

- The role of the systems houses will gradually increase, either as a source of sole support or of assistance to end-user staff, from 34% in 1978 to 41% in 1983. IBM has already sold a number of small single systems ("starter kits") which are providing the system houses with demand for general business applications. Very few scientific applications or process control work were found in the U.K.

- Throughout the forecast period the systems houses will not be involved in more than 40% of the installations and as little as 30% (in 1979).

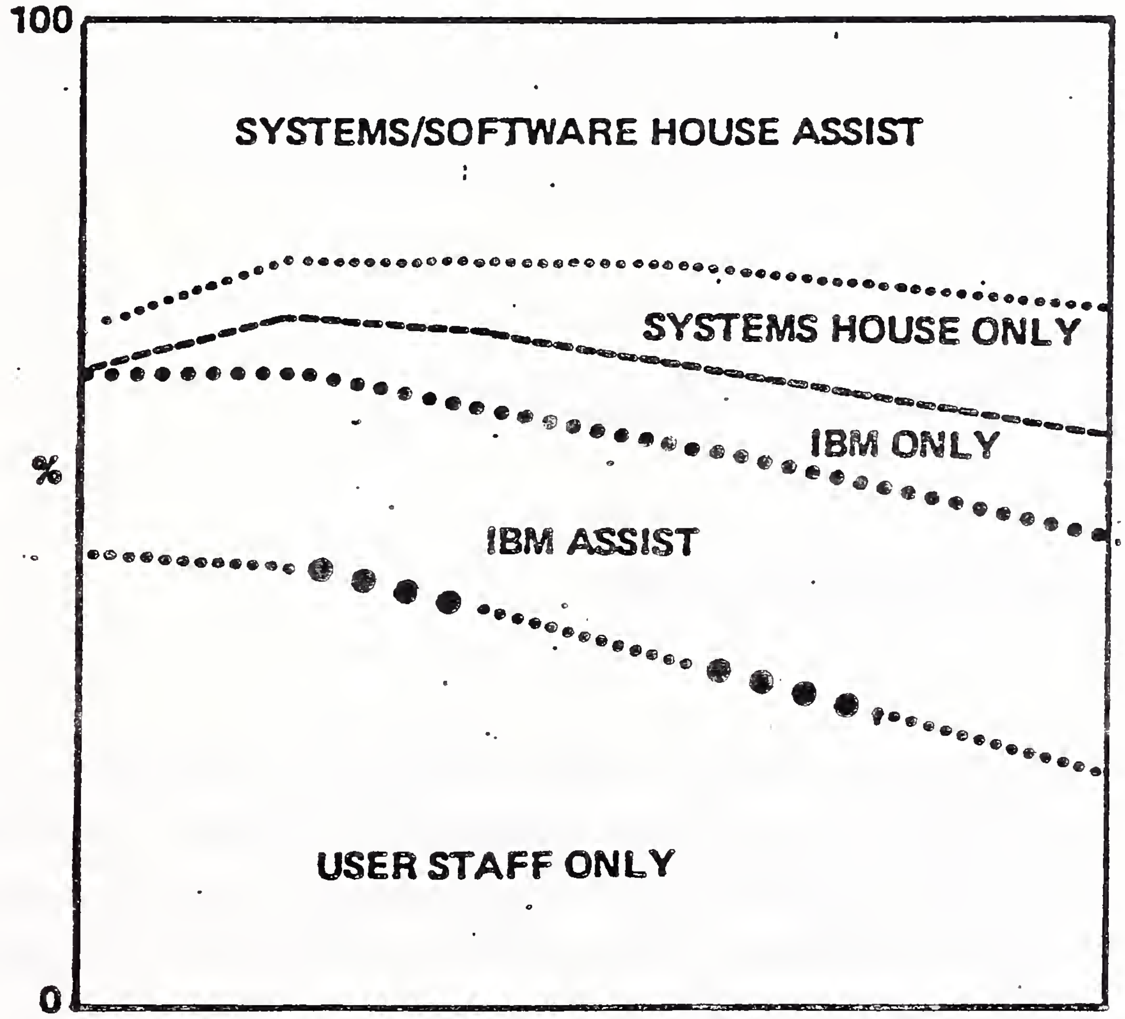
## ORDERS, SHIPMENTS AND INSTALLED BASE FORECASTS

- At the time of writing, it looked as though IBM would have difficulty installing 150 Series/1 in the U.K. by the end of 1978. INPUT believes this is below IBM's sales target. The key to the lackluster performance is the lack of qualified, experienced support people ; this has been noticed by the end-users. One manager's comment was : "they try hard with inadequate staff".

- This is expected to be a temporary problem, and the assumption has been made in the forecasts in Exhibit V-6 that this limitation will not continue.

- O.E.M. shipments are so far non-existent but are expected to pick up in 1979 when the systems houses have managed to organise themselves. Nevertheless, shipments from this source are not expected to exceed 270 systems a year (in 1981) and on average, will be slightly more than 140 systems a year.

# FORECASTED INSTALLATIONS SUPPORT MIX UNITED KINGDOM, (1978-1983) % of systems installed



| | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|
| **S/S/H:** | 30 | 24 | 24 | 25 | 27 | 29 |
| **SYS:** | 4 | 6 | 8 | 10 | 11 | 12 |
| **IBM-O:** | — | 5 | 7 | 8 | 9 | 10 |
| **IBM-A:** | 18 | 20 | 21 | 22 | 23 | 24 |
| **USER:** | 48 | 45 | 40 | 35 | 30 | 25 |

EXHIBIT V - 5

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- Orders at the end of August 1978 were 380 systems, and expected to reach 550 by year-end. In 1981 orders are expected to grow to a peak of 2800, five times the 1978 level.

- The installed base is projected to grow significantly from 150 systems in 1978 to 8650 by year-end 1983. It must be emphasized, however, that this is highly contigent on a market improvement on (i) IBM's sales effort, (ii) IBM's support staff, both in number and quality. INPUT's forecast includes these assumptions.

## E. THE MARKET IN ITALY (1978-1983)

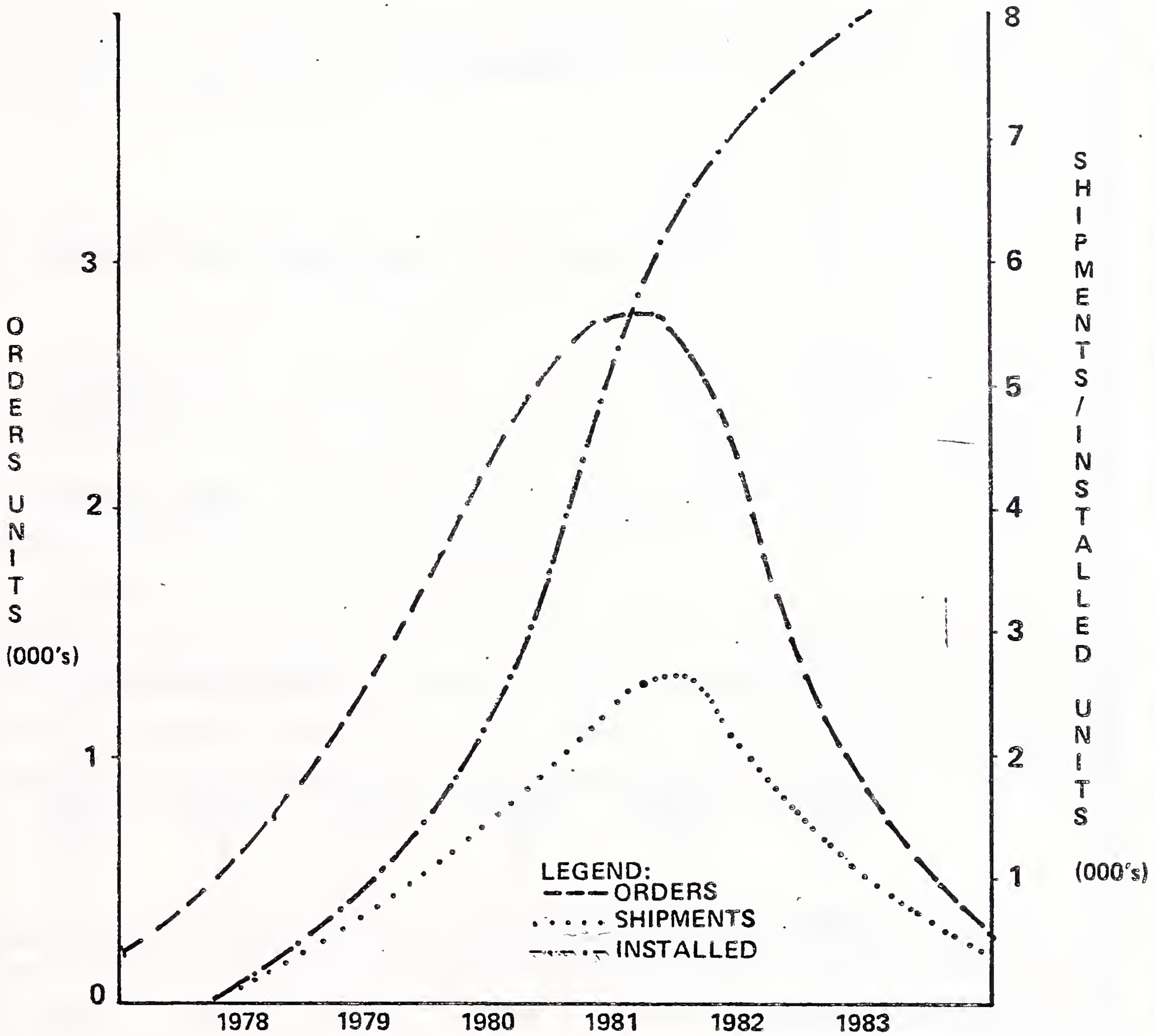
### INSTALLATION SUPPORT MIX

- In Italy, the majority of the first Series/1 installations software have been developed by the end-users themselves, with IBM or systems/house assistance. Where this assistance has been substantial, IBM has retained ownership of the software produced. Isolated systems have also been installed solely by systems houses or solely by IBM.

- By taking users intentions for future software developemnt as meaning 1979/1980, an indication of the trend in support of the Series/1 in Italy has been established and is shown in Exhibit V-7. According to the survey's respondents, the role of the systems and software houses will gradually increase, but only as a source of supplementary assistance rather than in a turnkey role.

- In the same way, while it is expected that IBM will limit the number of installations where they supply the majority of the software development effort to large/very large and prestige accounts, users anticipate relying on them for hand-holding for the foreseeable future.

# ORDERS, SHIPMENTS & INSTALLED BASE FORECASTS FOR THE U.K. (1978-1983)



| | YEAR END: | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|---|
| UNITS | INSTALLED: | 150 | 850 | 2600 | 5600 | 7700* | 8650* |
| | ORDERS: | 550 | 1250 | 2300 | 2800 | 2200 | 1100 |
| | SHIPMENTS: | 150 | 700 | 1750 | 3000 | 2200 | 1000 |
| % | OEM: | — | 7 | 8 | 9 | 8 | 7 |
| | IBM: | 100 | 93 | 92 | 91 | 92 | 93 |

* NET OF RETURNS

EXHIBIT V - 6

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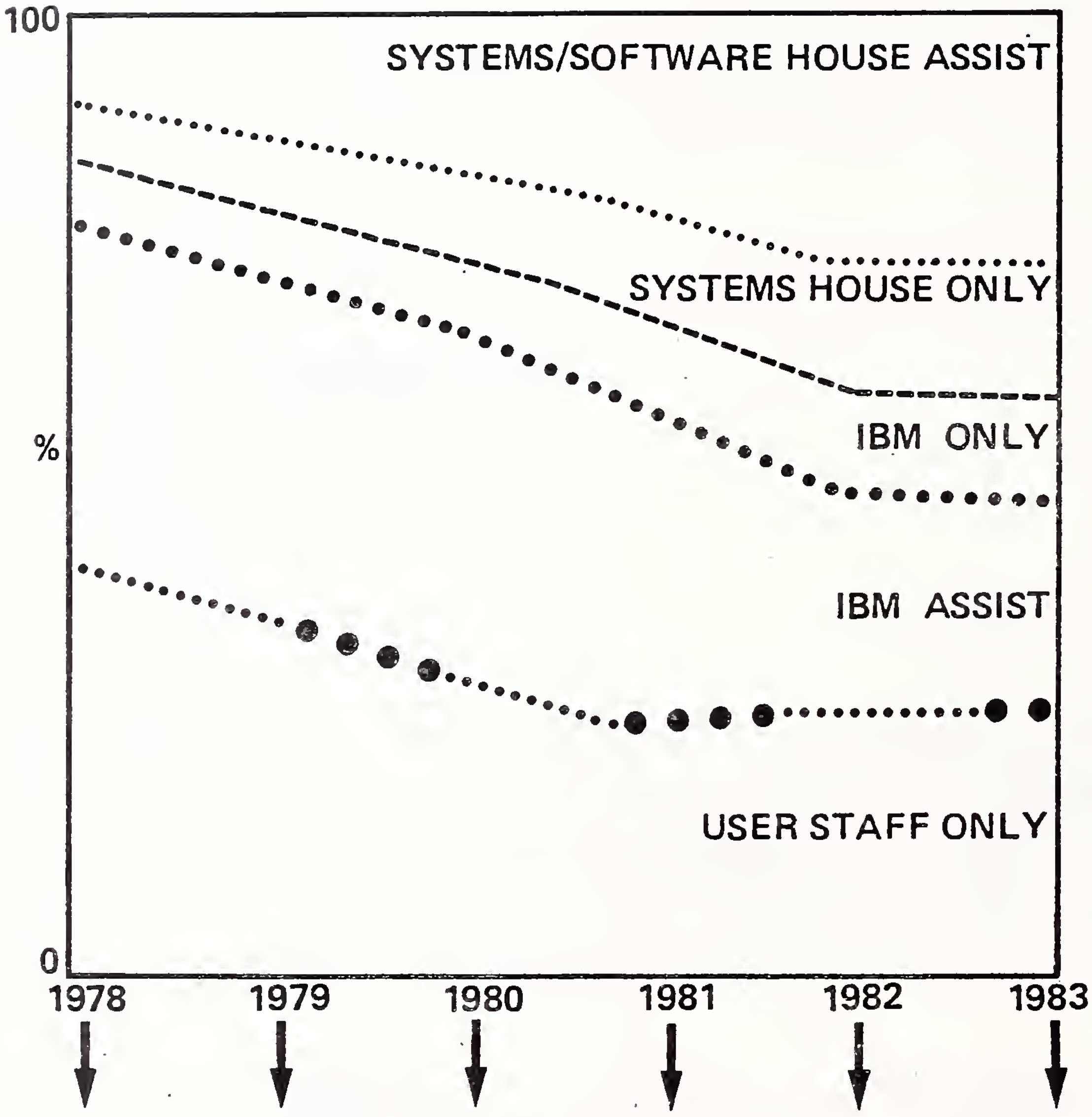
# FORECASTED INSTALLATION SUPPORT MIX ITALY, (1978-1983), % of systems installed



| | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|
| S/S/H: | 7 | 14 | 21 | 25 | 25 | 25 |
| SYS: | 7 | 10 | 12 | 13 | 14 | 15 |
| IBM-O: | 7 | 8 | 9 | 10 | 10 | 10 |
| IBM-A: | 36 | 31 | 26 | 24 | 23 | 23 |
| USER: | 43 | 37 | 32 | 28 | 28 | 27 |

EXHIBIT V - 7

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- Over the five year forecast period, the number of systems that will be installed by end-users via their own in-house staff is expected to drop sharply, as the Series/1 begins to penetrate the smaller companies who need implementation/installation support. By 1983 the proportion of autonomous end-user installations will nevertheless be still quite high : 28%. The peak year for shipments of this type will be 1981, when over 700 systems are forecast for installation by the end-user.

## ORDERS, SHIPMENTS AND INSTALLED BASE FORECASTS

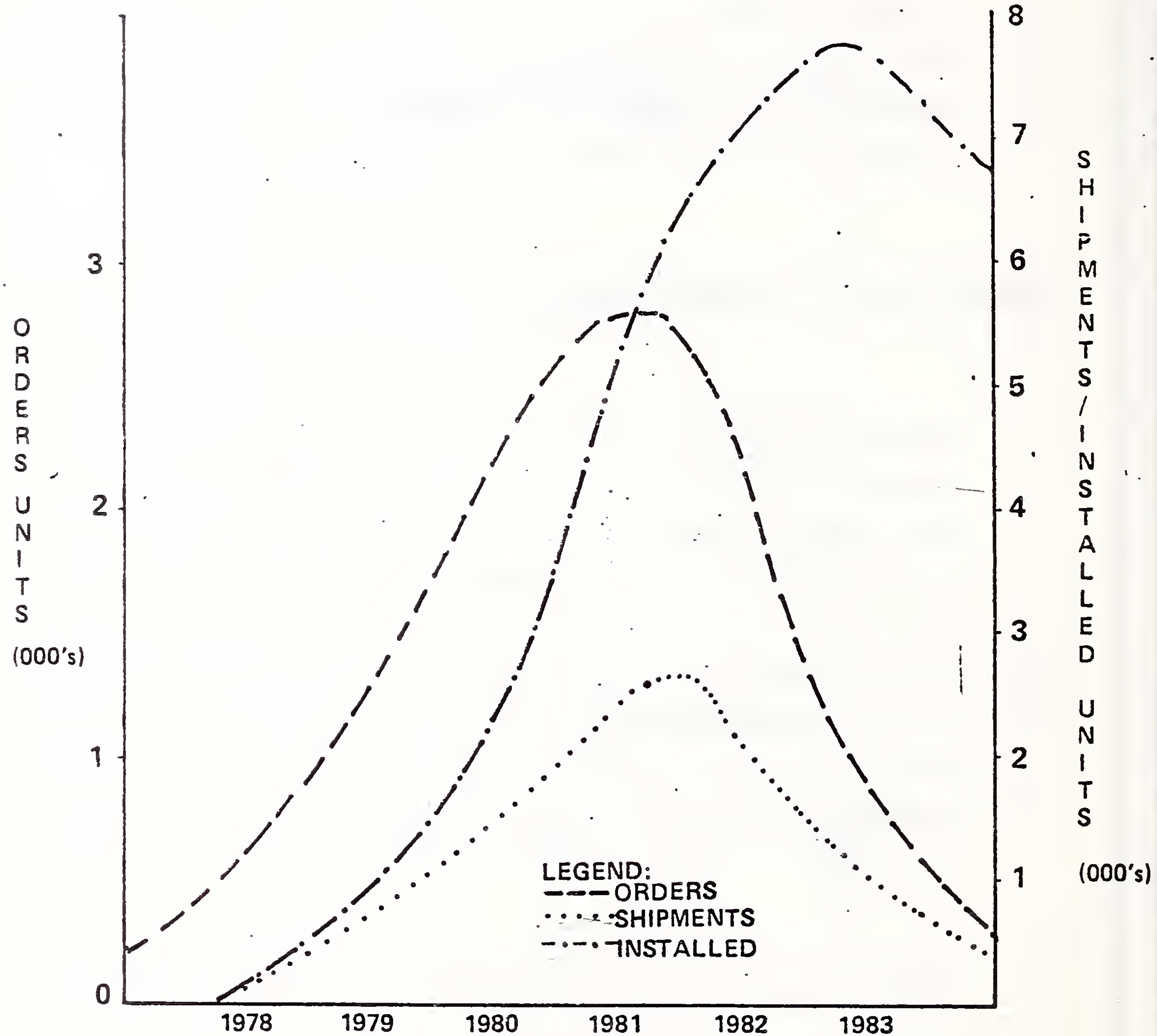
- At the current rate of installation, IBM will have 140 Series/1 installed by year-end 1978, more than double the amount found at the end of September this year. Of these systems none are expected to be sold through systems houses or other third party distributors.

- Orders at the end of August 1978 were 300 systems and are expected to rise to 450 by year-end. The main emphasis, in selling the Series/1 in Italy, has been on general business systems in network-connected mode, but a large proportion of process control applications have been installed, larger than anywhere else in Europe.

- Through 1981, the growth in orders, shipments and installed systems is expected to be fairly rapid, as show in Exhibit V-8. Thereafter, while the installed base will continue to grow to a peak of 7200 systems, orders are expected to decline, in favour of the replacement, upgrade product discussed earlier.

- Over the forecast period the OEM share of shipments is expected to begin with a modest 56 systems in 1979, and rise to a peak of nearly 300 systems in 1981. The attraction of competitive products (both from IBM's replacement/upgrade product and from IBM's competitors) is expected to begin having its impact in 1982, when shipments through OEM's will drop to 180. The systems houses will

# ORDERS, SHIPMENTS & INSTALLED BASE FORECASTS FOR ITALY (1978-1983)



| | YEAR END: | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 |
|---|---|---|---|---|---|---|---|
| UNITS | INSTALLED: | 140 | 700 | 2200 | 4800 | 6500* | 7200* |
| | ORDERS: | 450 | 1100 | 1760 | 2100 | 1700 | 800 |
| | SHIPMENTS: | 140 | 560 | 1500 | 2600 | 1800 | 800 |
| % | OEM: | 0 | 10 | 11 | 12 | 10 | 8 |
| | IBM: | 100 | 90 | 89 | 88 | 90 | 92 |

* NET OF RETURNS

EXHIBIT V - 8

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continue to assist in installation support, however, throughout the forecast period.

- Cumulatively, gross shipments by OEMs to the Italian market are projected to be just over 750, while IBM will ship over 6600 systems. In 1982 losses due to returns are expected to become significant, causing a loss of 1.5% of the installed base, continued through 1983.

# VI. THE ROLE OF IBM

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## A. AS MINICOMPUTER HARDWARE SUPPLIER

- To the services vendor planning a strategy for entry into or for continuing his presence in the Series/1 market sector, it is important to know not only that such a market exists and is solid, but also what long-term role or roles IBM is likely to adopt.

- It has been shown that IBM offered Series/1 initially in order to demonstrate a mini-computer capability but controlled the manner of its coming to the market to minimise self-impact. This was necessary because of the conjunction in time of two forces, one technological and one market-orientated. We refer to :

    - the growing importance of the minicomputer, itself the product of the last but one technological step function - the successful application of integrated circuits,

    - the increasing market awareness of the concept of distributed data processing (DDP), representing a genuine dissatisfaction on the part of users with DP as a remote, inflexible centralised service.

- With its installed base of large users, it is particularly instructive to review IBM's responses to the cry for DDP, and to show how these merge naturally with the advent of SNA (Systems Network Architecture) and recent announcements (8100 and 4300 series processors) into an overall master plan for providing a total capability for all sizes of organisations in an increasingly communications-orientated world.

## PRODUCTS AND STRATEGIES

- IBM's first foray into Distributed Data Processing (DDP) dates back to late 1973 when it introduced the 3790 Communication System which offered remote users the processing capabilities of a machine at the low end of the System/370 family, but with a catch : i.e., the 3790 was completely dependent upon the host.

- Although billed as a DDP product, it was in reality a variation on the theme of centralized processing as all programs were written and supported at the host and frequently downloaded to the 3790 at the remote site. This served to leave the remote 3790 user vulnerable to the host becoming inoperative.

- Nonetheless, the product offered good terminal screen formatting and data entry and did serve to provide some level of offloading of the host. Additionally, it was (is) fully supported by IBM and is an integral element in the company's Systems Network Architecture (SNA).

- As the product moved into the marketplace a number of shortcomings soon surfaced, including insufficient disk capacity, operational difficulties due to a lack of software support at the site, inflexibility to the attachment of foreign terminals and its relatively high cost in comparison to minicomputers (which are minimally supported).

- Subsequent 3790 upgrades have since enabled local programming and permitted remote 3270 terminals to be attached via suitable data links.

- Early user difficulties have contributed to a checkered reputation for the product with most of the marketplace regarding IBM (until recently) as only giving grudging support to the DDP concept.

- However, the above perspective has changed significantly over the last 18 to 24 months with the introduction of the Series/1, the Systems 34 and 38 and especially the 8100 a specific DDP processor with 3790 migration capability.

- The System 34, which may operate with up to eight peripherals, appears aimed at the first-time user within the small business computer market. However, it supports both the bit-oriented synchronous data-link control (SDLC) communications protocol as well as the older character-oriented binary synchronous communications (BISYNC) protocol. These features effectively enable the System 34 to function as a node in a DDP network with a 370 or 30XX host.

- The System 38, supporting up to 40 local or 256 remote terminals, may also be connected under SNA/SDLC to a 370 host.

- The Series/1 represents one of the most flexible and price competitive products announced by IBM to date. It has the capacity to be used as a basic building block by either sophisticated end users or system houses that are configuring DDP networks. It may function as either a powerful remote machine or a limited capacity host.

- Series/1 may have a variety of foreign peripherals attached to it while operating with a throughput capability approaching a 370/138. It may also be operating in a 3270 emulation mode enabling degraded operation with a 370/30XX host.

- It is possible that a combination of events may have contributed to IBM's recent and expected flurry of DDP related product introductions. These include :

  - High growth opportunities in the minicomputer and small business computer market.

  - "An idea whose time has come;" i.e., DDP (which is probably closely tied to the user's desire to break or slow the mainframe upgrade cycle).

  - Increasing competitive pressures by plug compatible and minicomputer vendors on IBM's traditional lines of business.

  - Initiation of a long-term product/market strategy tying all of the above together and consistent with corporate revenue growth requirements in the post-1980 time frame.

- Although some confusion did and does exist in the marketplace as to which operating division within IBM has the DDP charter, steps are being taken to resolve this short-term problem. In the interim, the Series/1, System 34 and 38 and to a greater extent the 8100, offer a powerful combination of products in support of the DDP concept.

## PROJECTED STRATEGIES AND ORGANISATIONS

- IBM's past and current DDP strategy can best be characterized as one of containment. This is in large measure due to the success of the Data Processing Division (DPD) in selling ever larger central processors in order to drive IBM software systems.

- However, the poor performance of IBM software for interactive and transaction processing is precisely what opened the door for distributed processing (both conceptually and economically). The controlled distribution of this excessive large scale software burden must be the keystone of IBM's future DDP strategy.

- While it has appeared that IBM is less than enthusiastic about DDP, it is more a question of timing rather than failure to recognize the economic significance of DDP. INPUT's conclusions concerning the situation from IBM's point of view is as follows :

  - In order to maintain traditional growth IBM must achieve revenues in excess of $30 billion by 1982, and in excess of $50 billion by 1987.

  - IBM's data processing revenues are currently heavily weighted towards central general purpose systems and associated peripherals (greater than 75%).

  - Increasing proportions of data processing dollars are being spent for: minicomputer systems, terminals, data communications services (and hardware) and program products. These are areas in which IBM has not been traditionally strong.

- It appears obvious that IBM must increase market penetration in all of the areas associated with DDP. Moreover, no one questions the fact they have the resources (financial, management and technological) to be successful.

- This being so, why has IBM not pursued these markets more aggressively and with more success? Several answers come to mind:

  - They haven't had to because the sale of conventional systems has been adequate to achieve corporate revenue objectives.

  - Until the formation of GBG, they have not felt comfortable with marketing to small end users - a weakness intolerable to IBM management. (This is indicated by hiring experienced minicomputer salesmen for Series/1 and the emphasis on OEM sales).

  - A vital ingredient in the overall IBM strategy is not yet available - communications.

  - Rapid pursuit of DDP would result in significant offloading of large central mainframes and be self-impacting.

- While most executives think they would like to have IBM's "problems", the shift to DDP requires both imagination and courage on the part of IBM corporate management. While IBM may appear to "win them all", the last major technological strategy shift was the announcement of System/360, and that was not as smooth as it appeared to the outside world.

- The IBM corporate perspective is important in understanding how their DDP strategy is being implemented.

  - DPD continues to play its role of servicing large scale customers and providing them with an overall framework (SNA) to proceed towards DDP. This containment strategy is working and the backlog of 3033s represents more raw computer power than IBM currently has installed.

  - The General Business Group (GBG) has been formed bringing together the General Systems Division (GSD) and the Office Products Division (OPD) under common management.

  - OPD is the fastest growing division in IBM, but its conventional product lines are potentially subject to impact as office automation occurs. However, it does have experience selling to end users in an office environment and GSD needs this type of marketing orientation. Since OPD needs an infusion of GSD technology, it should be a happy marriage as data processing and word processing merge.

  - The current conflict between DPD and GSD products was noted earlier. IBM corporate reaction is that this represents "healthy competition." Some confusion in the marketplace doesn't bother IBM as they pursue DDP from both extremes.

  - The missing ingredient of communications services (and products) was anticipated by IBM when they invested in Satellite Business Systems (SBS) - ostensibly because common carriers were not meeting the data communications requirements of IBM customers. When SBS services become available in the early 1980's, data transmission requirements will be satisfied for large IBM customers. IBM will then have enormous new markets available for graphic transmission, teleconferencing, electronic mail and integrated data and voice communications systems.

  - It is apparent that IBM is pursuing an interim corporate strategy which not only controls the growth of DDP (including communications) but allows the time to prepare its entire organisation for major new business opportunities in the 1980s. In order to achieve its growth objectives, IBM must embrace DDP on the broadest possible basis. It is currently in the process of methodically implementing a plan to accomplish this.

- Because of this interim situation, those users making heavy long-term commitments to the current IBM product line (for DDP) run a serious risk of being caught with obsolete equipment. But then, "replacing the old iron" has always been the name of the IBM game plan.

- By the time it becomes obvious that "data processing" is a cheap commodity available to all, IBM will be prepared to become the world's largest supplier of information systems (including communication services and products). During the 1980's concentration will be on business (and office) information systems. In the 1990's these services will be generally distributed into individual residences and IBM (or its successors) will provide products and services in the consumer market. At this point, DDP will be fully defined - long after the term has any significance or is of any interest.

## SERIES/1 PRODUCT MARKETING STRATEGY

- Since INPUT surveyed the Series/1 market sector in the summer of 1978, IBM has started to hand down the marketing/sales responsibilities from the previously dedicated central force to the normal territorial sales channels. This change was intitiated at the beginning of 1979.

- Exhibit VI-1 shows the structure of IBM's General Systems Division (GSD) in the UK company. Similar structures are implemented in other European countries.

- The diagram shows :

  - the coming together of Office Products Division (OPD) and GSD at Director GBG level, where reporting is both to worldwide Group/Division management and to the national general management (dotted line responsibility), to form a group sizeable enough to act as a counterweight to DPD,

  - the GSD Sales structure divided into Branches within Districts, generally referred to as the territorial sales force,

  - the policy of Branch salesmen selling all GSD products, which are principally System/3X series (32, 34 and 38), the 5110 desktop computer and the Series/1,

  - the retention of a National Accounts branch for Series/1 to give continuity of service to the larger users, targetted in IBM's original sales plan with the central force,

  - the provision of product marketing support from the staff management side for the complete range of products.

## STRUCTURE OF IBM'S GENERAL SYSTEMS DIVISION IN UK

Source: IBM UK

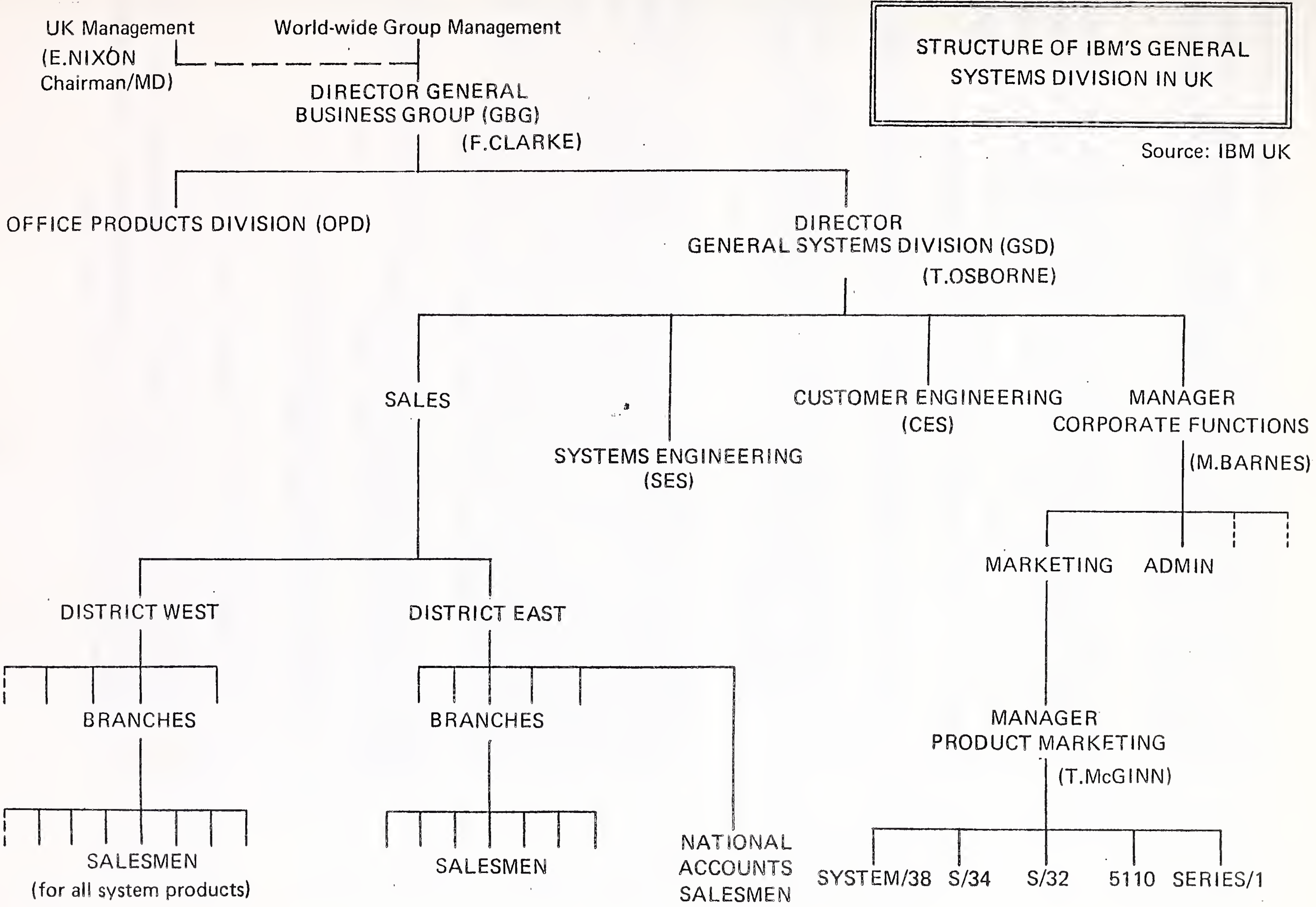

EXHIBIT VI 1

- The initial tactic for the territorial force is to sell only EDX-based Series/1 systems. This precludes the use of PL/1. Obviously, this tactic is subject to change and is geared to minimising the support requirement in the early stages of handling the product in the field.

- Systems based on other operating systems, e.g. RPS, will not carry the same percentage of points towards the salesmen's quotas. Being thus discouraged, such systems could more likely be supplied in turnkey contracts from system houses, who would pruchase from National Accounts branch. The IBM selling structure in this way accurately reflects the distinction between:

    - the first-time or small business user, to be served from the territories,

    - the DDP-oriented (possibly multi-system) purchaser needing more sophisticated support, whether purchasing direct from IBM or through a systems house.

- The Series/1 will be sold in the UK alone by approximately 100 branch salesmen. It will be left to the salesman to determine which of the competing products to offer the user, when situations of conflict/overlap arise. The emphasis for Series/1 will be to consider it in just those situations where previously the salesmen might not have qualified the prospect. Expectations for branch salesmen are that the non-Series/1 part of the product range will account for 80% of sales, i.e. Series/1 will occur in 20% of cases.

- IBM does not intend, at least in its UK company, to provide large amounts of support for Series/1 users. This is mainly due to :

    - the breadth and dissimilarities of its product range,

    - the logistical difficulty of finding/satisfying suitable SEs,

    - their desire not to delay the installation of simple systems which don't need much implementation, i.e. a recognition of the self-impacting nature of support provision at the small system end.

- Herein lies the system and software houses' new opportunities. Just as with the recent DDP announcement of the 4300 processors (the "E" Series), IBM hinted at a softening of its attitudes to services suppliers, so it will be with Series/1 now fully integrated into the GSD's field sales. Services companies must, however, not expect this softening to be at this stage expressed formally. That may come ; meanwhile suppliers must act as though it had, if they intend to be active with Series/1.

- IBM intends to publicise the presence of Series/1 in the field sales force's range in formal presentations to software houses with known competence on IBM or competitive equipment. This will be done via one-day seminars and three-day workshops. They also appear to recognise that Series/1 may appeal to a different type of software company to those who have been working on the System/30 series - the 16-bit mini background with some system software writing capability as opposed to the RPG/2 application programming expertise.

- As conclusive evidence of IBM's need for system and software house support with Series/1, it is indicative that no support is included in the sales price. Even the loading of basic software from diskette after commissioning will incur a charge for SE time. This is a different policy to that followed at the introduction of the first member of the 30 series, the System/32. In that case support was specifically provided for the 32 at branch level. With the Series/1, branch support from SEs must be shared with other products, and with the largest branch in the UK sporting 15 SEs, it is not going to be posible to detach a great deal of post-sales support for this latest addition to a full product range. Conversely, specialist support for Series/1 is being provided nationally by an 8-person team in Birmingham, - strategically placed in the structure to serve those accounts where prestige warrants extra support.

- It will be possible for Series/1 to be sold by DPD but this would happen via GSD. IBM have procedures for resolving the sort of contention problems, which could arise if both GSD and DPD are invited in to offer competing solutions, say to a DDP environment with GSD offering Series/1 and DPD the 8100. If such a situation were resolved in favour of Series/1, it could nonetheless be a natural DPD account, and therefore there arises the need for GSD to supply DPD on a subcontract (quota points being shared by agreement) basis.

- Finally. it is worth repeating two salient features of IBM's Series/1 strategy which do affect the services supplier :

  - volume discounts are not being granted,

  - maintenance by IBM will only cover equipment of IBM manufacture.

  On this latter point, if systems houses confine their purchasing of non-IBM modules to the supply of VDUs and printers, this second constraint would not prove a stumbling block to many users - particularly at the small user end, where IBM would not have the leverage of a large installed base of equipment with which to bring pressure to bear on the user, nor for the sake of the sums of money involved would IBM consider it worth deflecting valuable selling time. IBM's policy will be implemented carefully, but not vindictively.

## B. AS DATA SERVICES SUPPLIER

- Traditionally, IBM has been a large supplier of the standard range of service bureau products and services. However this business was severely curtailed in the US a few years back, when IBM's interests were sold to CDC and IBM was disallowed from reentering the sector before 1979.

- Since that time IBM has continued as a very large services provider in Europe. Exhibit VI-2 shows the 1977 RCS revenues of multi-national services vendors broken down across the different European countries. IBM can be seen to have a 12% market share overall.

## 1977 RCS REVENUES – MULTI NATIONAL VENDORS

| RCS VENDOR | FRA | FRG | UK | ITA | SWE | HOL | DEN | BEL | OTHER | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| I B M | 20.0 | 16.0 | 15.0 | 12.8 | 4.1 | 8.4 | 3.7 | 7.0 | 3.0 | 90.0 |
| GEIS (ex H'well) | 11.5 | 5.5 | 17.7 | 5.2 | 2.3 | 5.1 | 4.0 | 5.8 | 4.4 | 61.5 |
| CDC | 4.2 | 3.5 | 4.6 | 3.9 | 2.1 | 4.7 | 1.5 | 3.6 | 1.5 | 29.6 |
| CISI | 20.5 | — | 7.2 | — | — | — | — | 0.6 | — | 28.5 |
| ADP | — | 0.9 | 5.2 | 1.2 | — | 1.8 | — | 0.9 | — | 10.0 |
| COMSHARE | — | — | 8.8 | — | — | 0.9 | — | 0.4 | — | 10.1 |
| TYMSHARE | 5.9 | 1.2 | 2.4 | — | — | — | — | 0.6 | — | 10.1 |
| DATEMA | — | 0.4 | — | — | 3.1 | 0.1 | 2.4 | — | 0.2 | 6.2 |
| U C C | — | 3.8 | 5.1 | — | — | 1.1 | — | 1.8 | — | 11.8 |
| GSI | 19.1 | 2.9 | 4.0 | — | — | — | — | — | — | 26.0 |
| SLIGOS | 24.3 | 4.0 | — | — | — | 1.5 | — | 2.5 | — | 32.3 |
| CMG | — | 0.1 | 1.5 | — | — | 0.3 | — | 0.1 | — | 2.0 |
| SCICON | — | — | 5.9 | — | — | 0.1 | — | — | — | 6.0 |
| ATKINS/ON LINE | — | — | 5.5 | — | — | 0.1 | — | — | — | 5.6 |
| CSC | — | 0.2 | 0.2 | — | — | 0.1 | — | 0.3 | — | 0.8 |
| MBP | 0.1 | 2.5 | — | — | — | — | — | — | — | 2.6 |
| TOTAL | 105.6 | 41.0 | 83.1 | 23.1 | 11.6 | 24.2 | 11.6 | 23.6 | 9.1 | 333.0 |
| MARKET | 173.0 | 98.0 | 128.0 | 41.0 | 58.0 | 53.0 | 33.0 | 36.9 | 91.1 | 712.0 |

EXHIBIT VI – 2

- Appendix 8 gives detailed profiles of the DCS (Data Centre Services) and RCS (Remote Computing Services) activities within IBM UK, IBM Netherlands and IBM Belgium. This structure has recently undergone a revamp with the aim of establishing RCS as the title of all services offered on a bureau basis.

- The building of the supercentre at Warwick has caused speculation in the trade press, and with it some unease even has been aroused among the bureau community. Its purpose becomes clearer now with the policy changes which have been announced at the time of the 4300 processors (the "E" series). With these new processors IBM expects to sell volume business at low price - very much an enforced change of marketing stance on IBM's part ; enforced, that is, by the increases in price/performance brought about by use of LSI technology.

- In this new era of d.p., say IBM, it will not be possible to maintain the levels of free support and service, to which customers have grown accustomed without radical changes in organisation of both these service components of the total offering. Hence the new policies for :

| | |
|---|---|
| - support | - sell DDP products through regional Customer Centres, which act as communal clearing-houses for customers' problems during presales, preinstallation periods, |
| - service | - package preconfigured, system software sets, pretested in the factory for immediate "load and go" after hardware installation, doing away with the old-fashioned, long-winded system generations.<br>- support system software post-sales by national telephone-answering systems which access relevant specialist for calling back users with verbal fixes over the telephone ; all follow-up on-site visits to be chargeable by monthly software maintenance fee or on demand per call-out. |
| application software | - encourage use of the VM/370 operating system environment by providing a VM remote on-line testing service operated by the RCS group on the Warwick supercentre; thus relieving |

Branch Offices of individual on-site hand-holding during testing, or at least containing the amount of service required to a level where headcount increases are also lowered.

- The new phase of policy, which foresees easier, more tightly defined multiple-machine installations for users with whatever amounts of computing experience, will require considerable internal computing systems and power to support it. It is useful to speculate where IBM would be today without the enormous amount of computing power put to every conceivable internal use :

  - administrative systems,
  - marketing systems,
  - engineering and maintenance,
  - production engineering and quality control,
  - energy management.

- IBM has been prepared to take its own medicine, and is preparing to do so again by offering a plug-in do-it-yourself preinstallation user testing system on the supercentre. And this testing service is to be built round the VM concept to increase the interchangeability of user-hardware as system upgrades take place. The VM concept offers IBM the greatest degree of manoevrability for the future, in an environment where the introduction of new products is continually precipitated by the technological progress made by competitors.

- The picture that emerges does not appear to have any overlap with the Series/1's market sectors, though there must be a figure for the impact on data services, particularly batch services, of the hit rate for first-time SBC users, whether they migrate to Series/1 or another mini or SBC.

- In the longer-term IBM's Data Services role will include the distribution of communications-based computing power on a utility basis. This will coincide with the commissioning in the 1980s of capability provided by SBS (Satellite Business Systems), and will be able at some time to be offered at the household level of personal computing.

# VII. ROLES FOR THE COMPUTER SERVICE COMPANY

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## A. THE REQUIREMENT

- Series/1 poses more of an opportunity than a threat to services vendors. This is due to a number of factors :
  - IBM has a grand strategy for providing the information systems of the 1980s and 1990s,
  - IBM cannot control all aspects of this strategy with an equal degree of vigilance,
  - minicomputers are not one of IBM's traditional strengths,
  - both minicomputers and DDP have now been made respectable by IBM's specific involvelment in them as market areas,
  - however grand IBM's strategy, IBM will create far more opportunities than it can possibly fulfil unaided or single-handed,
  - the stability associated with handling any product with the IBM label.
- The main hurdle which must be overcome in the mind of the services vendor is the problem of zero volume discounts. This problem must be faced squarely, so that there is no suggestion of the possibility of there being discounts in future being factored in to the cost/benefit assessments of vendors thereby giving an

unduly optimistic forecast of future yields. A fast expanding systems company with whom INPUT talked is of the opinion that IBM will at the right time introduce volume discounts. This may or may not happen. Because of its uncertainty vendors must not base their futures on it; but rather take it as a bonus if it does come about.

- The expansion of the European computer services market over the next four years is shown in Exhibit VII-1. This gives a breakdown by four categories, but it is in the category of "Other" which comprises software products and professional services, that the opportunities for services vendors using Series/1 will mainly be, though there maight be spin-off benefits to other categories of revenue, e.g. to RCS revenue, from offering a Series/1 capability.

- The "Other" category is the second fastest growing sector overall (21%) against Interactive services (IA)with 23%, and in three countries (France, Italy and Belgium) it is in fact faster growing than IA. By 1982 this category is expected to have more than doubled to $2.5B (using constant 1978 dollars).

- The methods whereby services vendors can handle Series/1 as part of their product mix are shown diagramatically in Exhibit VII-2.

- The diagram shows (in the general case of any manufacturer supplying hardware to OEMs as well as end users):

  - at the top, three types of manufacturer who may be involved, either singly or as suppliers to each other, in the building of hardware:
    - the processor manufacturers, mini or micro,
    - the peripheral suppliers, who may include supply of special interfaces for instrumentation or communications,
    - the system manufacturers, usually the big names responsible for putting their own mark on equipment, whether manufactured in-house or bought-in,

  - in the centre row, the two main types of supplier to the end-user
    - the systems or software house,

EXHIBIT VII-I

## EUROPEAN COMPUTER SERVICES MARKET FORECAST, 1978-1982

| COUNTRY | 1978 ($ MILLIONS) | | | | | 1982 ($ MILLIONS)*** | | | | | AVERAGE ANNUAL GROWTH RATE 1978-1982 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | RCS | | BATCH | OTHER* | TOTAL | RCS | | BATCH | OTHER* | TOTAL | RCS | | BATCH | OTHER* | TOTAL |
| | IA** | RB** | | | | IA** | RB** | | | | IA** | RB** | | | |
| FRANCE | 60 | 135 | 439 | 247 | 881 | 142 | 170 | 851 | 603 | 1766 | 24 | 6 | 20 | 25 | 19 |
| GERMANY | 19 | 94 | 302 | 217 | 632 | 33 | 159 | 585 | 287 | 1064 | 15 | 14 | 18 | 7 | 14 |
| UNITED KINGDOM | 68 | 80 | 213 | 195 | 556 | 166 | 113 | 399 | 476 | 1154 | 25 | 9 | 17 | 25 | 20 |
| ITALY | 19 | 27 | 232 | 151 | 429 | 24 | 30 | 450 | 293 | 797 | 6 | 3 | 18 | 18 | 17 |
| SWEDEN | 14 | 52 | 153 | 89 | 308 | 34 | 76 | 267 | 217 | 594 | 25 | 10 | 15 | 25 | 18 |
| NETHERLANDS | 19 | 43 | 108 | 84 | 254 | 46 | 63 | 182 | 199 | 490 | 25 | 10 | 14 | 24 | 18 |
| DENMARK | 9 | 29 | 116 | 68 | 222 | 22 | 43 | 203 | 166 | 434 | 25 | 10 | 15 | 25 | 18 |
| BELGIUM | 14 | 30 | 62 | 44 | 150 | 33 | 47 | 120 | 115 | 315 | 24 | 12 | 18 | 27 | 20 |
| OTHERS | 24 | 68 | 94 | 59 | 245 | 63 | 87 | 208 | 144 | 502 | 27 | 6 | 22 | 25 | 20 |
| WESTERN EUROPE | 246 | 558 | 1719 | 1154 | 3677 | 563 | 788 | 3265 | 2500 | 7116 | 23 | 9 | 17 | 21 | 18 |

* SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES

** IA = INTERACTIVE, RB = REMOTE BATCH

***1982 DOLLARS ARE EXPRESSED AS "CONSTANT" IN THAT NO INFLATION FACTOR IS APPLIED; "CURRENT" 1982 DOLLARS WILL BE HIGHER, DEPENDING ON THE INFLATION RATE, COMPETITIVE ENVIROMENT, AND PRODUCT MIX IN EACH INDIVIDUAL CASE.

  - the system manufacturer's sales network, either of whom can supply on an OEM or turnkey basis i.e. with or without implementation and integration support included,

- at the bottom, the end-user who also has the option to buy selective parts of his system from different sources e.g. hardware from IBM, software and support from his local software house.

- In the case of IBM and the Series/1 some of the supply lines (arrows in the diagram) are likely to be infrequently used e.g.

  - supply of peripheral equipment to the manufacturer (IBM),
  - supply of turnkey systems by IBM.

  These lines have been marked with a half-brace (⌇).

- The supply of application software is expected to come from

  - a software house, with or without tailoring/implementation

  - the end users' own programming resources.

## B. THE SERVICE BUREAU OFFERING RCS AND ON-SITE COMPUTING

- RCS (Remote Computing Services) are now fully established as a major category of processing, accounting currently (1978) for $804M or (22%) out of a total of $3,677M for all Western European services markets. It is still only the third of the three major divisions of service; both Batch and Other Services have greater percentages of the market (47% and 31% respectively).

## DISTRIBUTION METHODS FOR SMALL COMPUTER SYSTEMS

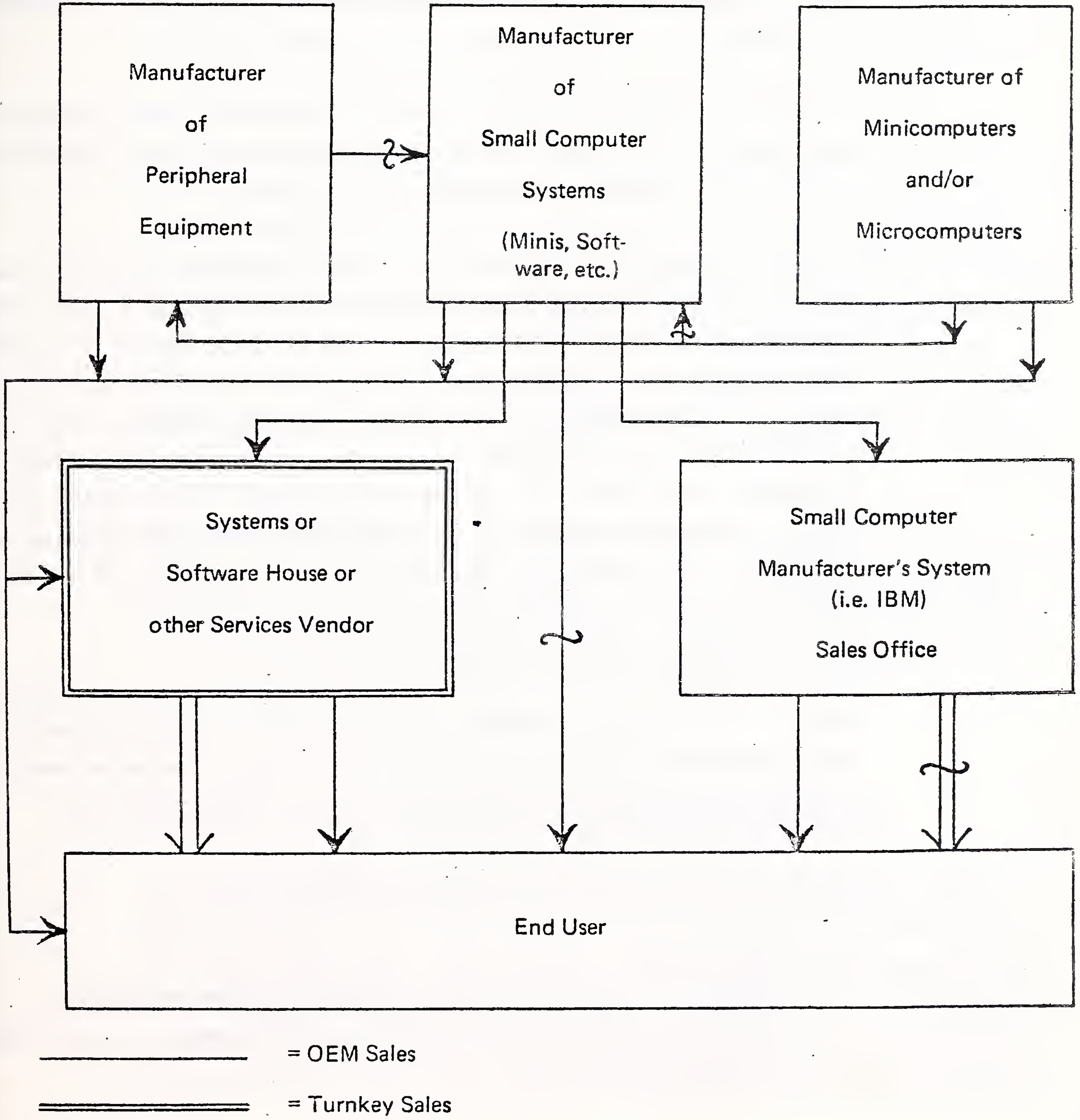
Manufacturer of Peripheral Equipment
Manufacturer of Small Computer Systems (Minis, Software, etc.)
Manufacturer of Minicomputers and/or Microcomputers
Systems or Software House or other Services Vendor
Small Computer Manufacturer's System (i.e. IBM) Sales Office
End User
= OEM Sales
= Turnkey Sales

EXHIBIT VII-2

- A recent INPUT report from the US (April 1977) indicated that purchasers of small business computers were often losses to processing services vendors, and that about 30% were former RCS users. Therefore, it is clear that the growth of RCS in North America is being impacted by minicomputers and SBCs, particularly with IBM's increasing capability in small systems, one must expect this impact to exist also in Europe.

- A new type of service is now being offered by some RCS vendors, though it is still too early for it to form a major category on its own. It is called On-site Computing (or sometimes Combination Processing).

- On-site Computing can be offered by an RCS vendor or a systems house, though most likely by the former. It consists of providing a small local processor or processors on the end-users site, with connections to an RCS vendor's mainframe. This combination allows local processing of data to take place on the end-users site with bulk work being transmitted to the RCS supplier's site for number-crunching, large file updating, long print runs or timesharing etc. In this way the user has the best of both worlds; small volume, quick response work need never leave site, while bulk processing can benefit from the economies of scale and software availability of the large mainframe.

- On-site Computing is a new type of service for most bureaux. In order to launch it, bureaux should consider joint ventures with selected softwae and system companies, who may have a more suitable range of skills for handling the local processing end of the service.

- The software house usually has suitable experience of:

    - minicomputers,
    - turnkey sales with their attendant hardware management problems,
    - pandering to the end-user's desire to keep his hands on his own data processing (control).

- On-site computing is fully in tune with the DDP concept. Like DDP it is an "all-things-to-all-men" approach permittiong the concept to sell, without requiring every last item of detail to have been previously spelt out.

- The concept should be considered by RCS vendors when looking at the impact of Series/1. Each provides the other with a suitable vehicle for launch. The IBM label helps the RCS vendor to enter the On-site computing sector; the RCS vendor levers IBM (or the local software houses) into early sales.

- It is particularly appropriate for the medium, sized manufacturing company with a number of scattered sites. The company might be employing a medium range mainframe for a number of commercial and production applications and use manual or visible record accounting equipment at its smaller sites, but would not have justified a fully integrated production control system. If the time has come for the central mainframe either to be upgraded or even to be replicated in the other sites, the company becomes a prospect for a combined mini and mainframe approach, and hence should be a target for the on-site computing vendor.

- The main revenue increase for the RCS vendor to be gained from On-site computing will come from the "Other" category of INPUT forecast revenue, which will include implementation charges for Series/1 turnkey projects. There is also the prospect of capturing companies' corporate processing by mainframe replacement.

## C. THE LARGE SYSTEMS HOUSE WITH FULL TURNKEY CAPABILITY

- This type of company is among the fastest growing in the industry. It gets its dynamism from a flexible, basically user-oriented approach. It is able to fill in the gaps in any user's data processing services by providing systems and programming, staff hire, processing services, special hardware systems and integrated configurations. In the case of the larger houses, they are sometimes indistinguishable from an RCS vendor and they may have an RCS division. In most instances, however, companies have a major component of work which inclines them either towards processing services or towards systems development as their main revenue earning activity.

- Series/1 is an ideal machine for this type of company to include in the range of hardware for which it offers services because :
  - Series/1 can be used on as narrow or as wide a range of applications as the systems house chooses,
  - Series/1 still has many gaps in systems and, more particularly, application software,
  - Series/1 can be used as a module in a larger special system or network, particularly where interfacing to main line IBM equipment is required,
  - offering Series/1 adds another plank to the company's range of products/services without materially impacting any product already offered and without requiring the take on of a new type of resource.

- There are specific reasons why every large systems house should offer Series/1, thogh not necessarily in turnkey systems mode:
  - without Series/1, the company can be accused of only offering minis when there are valuable discounts to be pocketed,
  - absence of a "one stop shopping" approach to the large IBM users,
  - facing the possible criticism from IBM that their minicomputer policy is hostile to IBM; this criticism could filter back to the end-users in competitive situations where IBM is regarded as an impartial third party, whose unbiased opinion is asked.

- Many of the largest systems houses have gained their preeminent positions through large government contracts in the military or administrative application areas. They are thus well able to cope with the complete range of applications for which Series/1 will be offered. This aspect of their capability should be made visible as part of their selling strategy with Series/1, and made visible to both the end users and IBM, who may well limit the market sectors at which they target their own marketing and selling. Thus the benefits of collaboration become evident to IBM as well as the end users.

- Important sales targets for the larger system houses are:

    - the medium and large companies where dispersed operations show that a Facilities Management approach based on combination processing might be a short-listed solution for future evaluation at the next major d.p. usage review,

    - overseas markets such as the Middle East, where IBM's world-wide coverage gives it added attraction (and credibility) over the traditional mini-suppliers,

    - the US market, where the importation of software products for the Series/1, especially applications packages, will find an already established market sector,

    - the European PTTs, whose viewdata-type systems show an aspiration to enter the VAN (Value Added Network) market, which may yet prove as big a provider of software products (to small organisations with office computers) as of news information, such as can be provided by the broadcasters' teletext services,

    - selected industries, where the company has built up experience in past projects and/or where association with the IBM name would be particularly beneficial.

- Appendix 9 describes the preparations which have been made by one of the largest software/systems/consultancy groups in Western Europe, prior to launch of an IBM and Series/1 systems capability.

## D. SMALL AND MEDIUM-SIZE SYSTEMS/SOFTWARE HOUSES

- Exhibit VII-3 gives an analysis of the distribution of UK computer service companies by size of annual turnover and principal activity. The analysis is of the 481 companies with a quoted annual turnover taken from INPUT's CAMP/UK programme for 1977-78. This represents an 82% sample of the 582 companies currently listed in that programme. Allowing for better than 95% coverage being obtained by CAMP, we are looking at figures derived from an 80% sample of the service company population.

- The four categories of turnover, though containing some numerical arbitrariness in their selection, define types of company which are familiar to the industry. Many of the largest category (A) include the service wings of the major manufacturers.

- The classification by principal activity groups together both types of RCS vendor - Interactive and Remote Batch, and separates out "off-line" processing bureaux such as those specialising in card and tape punching, OCR input etc.

- The percentage figures indicate the percentages of the 481 total. They are derived from INPUT's estimate of the number of companies in each category. They do not necessarily reflect the amount of business turned over in each activity, nor could that be easily obtained from them because:

    - companies will turnover a proportion of their revenue in non-principal activities,

    - an average turnover figure in each size category has not been calculated.

# SAMPLE COMPUTER SERVICE COMPANIES
# BY 1977-78 TURNOVER
# AND PRINCIPAL ACTIVITY

| ANNUAL TURNOVER ($M) | Large | Medium | Small | Very small | ALL |
|---|---|---|---|---|---|
|  | >10 | 10->1.0 | 1.0->0.1 | ≤ 0.1 |  |
| PRINCIPAL ACTIVITY / CODE | A | B | C | D |  |
| RCS | 10<br>2.1% | 36<br>7.5% | 12<br>2.5% | 1<br>0.2% | 59<br>12.3% |
| BATCH | — | 35<br>7.3% | 82<br>17% | 7<br>1.5% | 124<br>25.8% |
| SOFTWARE & PROFESSIONAL | 9<br>1.9% | 47<br>9.8% | 140<br>29.1% | 28<br>5.8% | 224<br>46.6% |
| OTHER (EG:DATA PREP. COM. OCR BUREAUX) | — | 7<br>1.5% | 56<br>11.6% | 11<br>2.3% | 74<br>15.4% |
| ALL WITH QUOTED TURNOVER | 19<br>4% | 125<br>26% | 290<br>60.3% | 47<br>9.8% | 451<br>100% |

SOURCE: CAMP/UK.

EXHIBIT VII-3

- The intention of the diagram is to show the clustering of units around the small software/consultancy type of company, with a secondary less dense region occurring in the medium sized bureaux. There are a lot of management teams in this side of the industry compared with the total yield of the sector. With the UK alone turning over $556M in 1978 from 582 organisations, the average turnover is less than $1M - indicating a small company, people-orientated sector.

- Obviously the picture would be different if the analysis were extended to other European countries:

  - France would show a bias in favour of companies which were principally bureaux,

  - West Germany has less small organisations,

  - Italy and the smaller nations, however, would again weight the analysis in favour of smaller companies.

  UK, therefore, is a reasonably representative sample.

- In spite of the trend towards fewer, larger unit companies at the top end of the computer services industry, it is unlikely that the existing distribution of suppliers will vary appreciably over the 5-year forward forecast period of this report. Reasons for this are:

  - data processing is increasing, not decreasing, in complexity; functional specialists are in demand in all companies, and this need will be reflected in the presence in the market of smaller companies offering specialist services e.g. in database technology, telecommunications, interfacing, etc,

  - increasingly as in-house computing spreads to first-time small company users, the "localness" of the smaller software companies and bureaux will be an added asset to their marketing. The small business man is not immediately nor automatically in favour of service from large companies. He may be overawed by them; more likely he will consider them exorbitant. He will prefer as with the other purchases he makes to obtain his computing from a local supplier,

- specialisation by industry will also account for a continuing future for smaller concerns,

- the attraction of data processing for the independently-minded entrepreneur, and ease of entry to a labour-intensive industry.

- The chief factor militating against the survival of the smaller company will be the predicted increase in the ease of application programming. However, this will be offset by the increasing need for specialists and by a shift towards the design and implementation of more rigorosly tested systems with greater reliability and resilience. In other words the predicted provision of sophisticated software prodution tools will cause a shift in emphasis from programming to systems analysis and design where standards are woefully inadequate today.

- The role played by the small and medium-sized software company in working with Series/1 is judged to be important, if not critical. Since INPUT surveyed the market sector last year, IBM has not only handed over Series/1 as a standard product to its territorial sales force, it has also introduced a more stringent software support policy for the smaller end mainframe machines (the new 4300 processors announced in February 1979). Both these actions display a requirement for volume sales with minimal impact from software support to hinder fast sale closure and revenue input. Though IBM's Series/1 strategy does not formally require involvement of software houses, the implication is there for all to read.

- The majority of Series/1 sales will come through the field, and a large percentage will be for entry level users. The field is not equipped to give quantities of application support nor are there many application packages which can be offered. The first-time user will need assistance; the local software house should be equipped to provide it. He must be able to make his presence known.

## DISPERSED DATA PROCESSING

- There is a particular size of end-user who should now be of interest to the medium-sized system house considering Series/1 as a turnkey solution for in-house user installations. This is the small company (turning over from $2-10M per annum) whose activities are dispersed geographically. An example that springs to mind is a distribution company serving the home-handyman shops and manufacturing in a single location for a part of its total catalogue of products, while providing the rest of its catalogue as a distributor for others. The company has a head office with warehouse, other depot locations and the small factory. Integrated accounting and order processing is required centrally at head office, stock recording and order entry are the main requirements at the remote sites. Communication of data between head office and the locations can be off-line (by post) because of the local autonomy of stock allocation and despatch, and the acceptability of 24 hour (first class post) delay in receipt of order details centrally. On-line communications would in any case be difficult to justify on the volumes of data to be transmitted.

- Such a company could justify a turnkey solution ranging in price from $100,000 to more than double that, depending on the number of remote sites to be served and the number of applications to be mounted. The breakdown of the cost is likely to be:

  - central site $80,000 - $160,000 including software,
  - remote sites $ 8,000 - $ 12,000 each, with software.

- The remote site hardware is what makes this now an attractive deal for this size of company. Based on microprocessors it is possible to purchase intelligent terminals with local processing capability and floppy disc (diskette) storage. Supplied with basic data entry software for orders and a tailored stock recording/despatch program suite, they can be replicated as a fixed system at all remote sites. At last, the businessman can purchase a system at an affordable price which allows him to continue to operate his sytem in the way it runs on manual data processing.

- Series/1 is an ideal candidate for the central site processor for this type of system. It has the diskette which can be used as the off-line interface to remote locations. It can be configured flexibly to give the power and storage required for an individual company situation. It can support the standard commercial applications required centrally, and it would be cost/effective in a system where a lot of added-value is concentrated on non-Series/1 equipment i.e. the remote site micro-systems can earn the volume discounts not provided by IBM. The maintenance problem would be perfectly straightforward since the boundary of the IBM equipment would be clearly visible.

- Previously, this type of company has had to forego the installation of on-line intelligence at the remote locations. Earlier solutions confined themselves to the central site with manual methods being retained elsewhere. The increased responsiveness and data accuracy provided by d.p. equipment are exceedingly attractive to users. Software/system houses have a remarkable opportunity to effect a total business solution in this area and to gain industry expertise, which could allow repeat sales of similar systems once a reference sale has been established.

- Though IBM are not known to be actively targetting the dispersed data processing market - defined here as similar to DDP (Distributed Data Processing) but without the on-line communications, with the modularity and flexibility of Series/1, it possesses a lot of the components required for the solution. This is a market sector which is available to the medium-sized software company with business data processing expertise and mini-computer turnkey experience.

- The IBM sales force will wish to establish contact with local software companies to speed the implementation of Series/1 based systems. The type of user appearing on GSD's prospect lists has already clearly identified to IBM his requirement for application software. He probably still thinks rather naively in terms of the total package solution. For this reason software houses wishing to produce software for Series/1 must:

  - define the product as a system package or a capability,

  - familiarise IBM with their capability by contacting their local sales offices, attending suitable Series/1 induction courses and acquainting GSD central marketing, if they perceive they have a product with more than local applicability,

  - be prepared to invest in documentation and demonstration kits.

- There is a rich supply of both system software utilities and application products from US and some European software companies, which can be obtained under license from their producers. These products add to the credibility of the software house's expertise, but must be carefully chosen after suitable evaluation. Remember the first-time market will initially at any rate be taking EDX-based systems. Houses must therefore dovetail their marketing tactics with those of IBM especially at the local level where ground rules must need be bent in order to achieve quotas.

- It is going to be important for the smaller software house to determine whether it is offering turnkey systems with Series/1 or whether it is content to offer the software and support purchased as a separate contract from IBM's hardware order. At the small end, the user will not be too aware of the contractual niceties, but the software company will be expected to deliver working software. He will not be able to shelter behind the hardware as a defence for his own shortcomings.

## SYSTEM SOFTWARE

- Though Series/1 is now equipped with a range of operating systems and utility software, there are noticeable gaps which will need to be filled if the series is to reach all the applications for which it is suited. Certain of these gaps can only economically be filled by enhancements of IBM software e.g. support for new peripherals under combinatins of operating system and program language not immediately supported.

- Other facilities can be provided by software companies and sold through IBM and normal marketing channels in both the country of origin, other European countries, and also in the US where software product marketing is more highly developed and therefore accepted.

- All software products must be marketed with sufficient external documentation (i.e. user specifications and guides), sales brochures, demonstration facilities and with support policies and prices fully worked out.

- Suggested areas for system products are:

  - a basic TP monitor for the medium-sized DDP user,

  - database management software for the typical minicomputer user e.g. an implementation of SIBAS or a product between DEC's RMS-II and DBMS-II offerings, perhaps similar to DG's INFOS,

  - High-level languages such as CORAL, PASCAL for the real-time user,

  - foreign device drivers for specific PCM peripherals under each operating system,

  - a transaction-orientated work station system similar to DEC's TRAX.

- A more ambitious area for commercial applications would be the production of a transaction-orientated run-time interpreter driven by application specific table files.This is the trend for software development on business minis, where the overhead incurred by a run-time table processor is, for the volumes being processed, sufficiently offset by the increased speed of application implementation, which results from programs being defined as sets of parameters to drive transactions through "execution skeletons" preformed as higher-level processing tables defining structured calls to system or basic application subroutines. At the present time software houses are tending to treat work in this area as "commercially sensitive", since such tools allow for faster implementation than their competitors and therefore hopefully give a competitive edge. They are not yet therefore seeing these products as widely marketable, though there are signs that some houses wish to specialise as the "machine tool" producers for the other type of company which offers end-user implementation.

- Appendix 11 gives a sample list of software products known to INPUT to be currently available for Series/1 users.

## E. BATCH BUREAUX

- The batch bureau is in the curious position of being in the busiest sector of the services market and yet, despite that, being in a precarious business situation in the longer term. The reasons for this paradox are:

  - batch processing is widely regarded as an obsolescent system design technology, although in the commercial environment once transactions have been derandomised by the appropriate data capture subsystem, the most onerous of the remaining classes of processing - updating, reporting and file maintenance - are all eminently suited to batch treatment. Certainly, on-line file interrogation has a random nature and is not susceptible to the same processing mode. However, large amounts of work still and always will fall quite naturally into batch mode,

- batch bureau processing is a capital-intensive type of business, and here the smaller bureaux are at a disadvantage to the big battalions. Hence, a lot of the batch work now being run and forecasted to continue (through 1982) will be performed by the large vendors,

- the majority of batch bureaux are in the medium and small categories (see Exhibit VII-3), where earnings cannot be stretched to cover equally investment in:
  - enhancement/replacement of hardware,
  - extension into new technologies e.g. telecommunications,
  - maintenance of software product technology.

- Most of the smaller bureaux are not offering RCS because it wouldn't be cost/effective for their customers. They will be increasingly at risk, however, against companies or organisations like IBM or the British Post Office, who aim to be able in the 1980's to pipe cheap computing power into any and every establishment via the access port of a cheap terminal.

- The batch bureaux, who are usually established with a local customer base, and everything that stands for, have a breathing space of a few years (one would say five at the most) with which to revamp and upgrate both technically and commercially the services they are offering and the image they present. The data entry bureaux are in the same position but probably on a tighter timescale. The specialist OCR, OMR and COM bureaux should also reexamine their long term viability and expansion plans.

- In all these cases, INPUT recommends diversification as one possible component of future strategy. Series/1 offers an opportunity for branching out into dispersed or on-site processing initially on an off-line basis before acquiring the necessary data communications skills. Bureaux should consider mergers/joint ventures with:

  - local software houses wishing to expand into turnkey systems supply but lacking the necessary capital backing,

  - local office equipment suppliers faced with supporting and servicing with software the new ranges of office products:
    - word processors
    - intelligent copiers,
    - facsimile systems.

- There is scope in these areas for bureaux to provide a training and operations hand-holding service to new users of these products. They are better qualified than software houses to provide operational assistance to users as their skill levels match the required technician grades more closely than the professional levels of the software providers. INPUT foresees interesting local groupings of:

  - bureaux,
  - software houses,
  - staff agencies and
  - office product suppliers.

  Release of Series/1 to the field and IBM's latest communications-orientated approach to systems and their support should be the trigger which stimulates the average bureau with reexamination of its future role. This is especially relevant if the bureau is anyway running on IBM mainframe or small business machines i.e. S/370 and its derivatives, S/3 or any of the S/3x series.

## F. COMMON PROBLEMS

- There are a number of aspects related to involvement with Series/1 which are shared by all the types of service company if they are seriously thinking of entering the sector:

  - Familiarisation with the capabilities and potential of Series/1,

- Adopting a policy with regard to the absence of volume discounts,

- Realising the nature and quantity of sales effort they must themselves invest,

- Deciding a policy on which PCM peripherals to supply (if any),

- Liaison with IBM at local and/or national accounts levels,

- Integration of Series/1 into their total product range in a way which will minimise mutual impact between products,

- Identification of and development into vertical market slots where competition is likely to be less severe,

- Recognition of the different sources of their organisation's added value, and establishment of procedures for the resolution of any conflicts which could arise.

- INPUT included a number of European System houses, who had already worked on Series/1, in the 1978 survey of the market sector. Some of their comments are summarised in Appendix 12.

# VIII. MARKET FORECASTS FOR SERIES/1 SERVICES TO 1982

# VIII. MARKET FORECASTS FOR SERIES/1 SERVICES TO 1982

# VIII. MARKET FORECASTS FOR SERIES/1 SERVICES TO 1982

- Where previous sections have outlined the background to the Series/1 product and the marketing approaches which it can attract, this section attempts to quantify the different market segments which are open to the computer service organisations operating with it.

- The system and software houses who have so far become involved have done so to degrees which vary widely, ranging from "arms-length" to whole-hearted commitment. The impact which they expect the Series/1 to have on their businesses as a whole is just as varied, as is shown in Exhibit VIII-1.

- In 1978 the average percentage increase in turnover was not only bigger than in 1977, it was also more widespread. It applied to more companies, not only affecting more countries but also within each country market. The total turnover (the latest reported previous to the survey) of the houses responding was $22M; taking into account some increase over these figures, the accrued business from Series/1 was expected to be a little over $6M in 1978 for these houses. Allowing for other countries not surveyed, INPUT's estimate of the total amount of Series/1 business passing through system and software house accounts in 1978 is approximately $8M. This includes:

  - hardware sales,
  - system software product revenue,
  - application systems and programming.

## IMPACT OF SERIES/1
## ON SYSTEMS AND SOFTWARE HOUSE BUSINESS

| CALENDAR YEAR | TOTAL CONTRIBUTION OF SERIES I (%) | | |
|---|---|---|---|
| | FROM | TO | AVERAGE |
| 1977 | small | + 60 | + 14 |
| 1978 | 3 | + 70 | + 23 |
| 1979-1981 | 5 | + 100 | + 33 |

Notes :

Values given for 1977 and 1978 are the range and average registered by the systems/ software houses interviewed.

Values for 1979-1981 are the estimates provided by the same companies.

EXHIBIT VIII-I

- Average hardware sale price for each OEM installation was $49,400. Average system software yield per system installed (IBM and OEM) was $4,100. Average application software revenue per system was $6,200. Exhibit VIII-2 shows the range of user's expenditures on outside software support in the four major contries, as a dollar cost per site and per application implemented.

- Extrapolating for the years 1979 through 1981, and allowing for (i) the growth of the surveyed systems houses' business, and (ii) the growth of Series/1's contribution to their turnover (an average +33% predicted), these systems houses alone will be generating $15M from Series/1 in 1981.

- As a "bare-bones" system, the Series/1 initially appeared as the ideal vehicle for system and software house added values, in the form of customized implementation support, standard applications, system software of all kinds and full turnkey solutions - none, or very little of which was initially available from IBM.

- Very rapidly, however, this picture has changed with a vast array of software coming from the U.S. services industry and from IBM. As a result there are third party vendors in Europe who are delaying decisions for implementing software development plans and involvement with the Series to any large degree, until the product's profile has become clearer.

- Their most disquieting concern is "where will IBM produce application software?" If this question could be clearly answered by a policy statement, development plans that have been moth-balled so far could be implemented. As it is, there is a fear that once a clear market target has been established, IBM could enter with its unparalleled resources and absorb the larger part of it.

- INPUT believes it can now dispell this fear quite unequivocally. As has been shown with regard to IBM's role in the minicomputer, DDP and data services sectors, IBM is not concerned to "scoop the pool" by attempting total hardware/software solutions with Series/1 to the exclusion of third parties.

# OUTSIDE PROGRAMMING EXPENDITURES, BY COUNTRY, (1978)

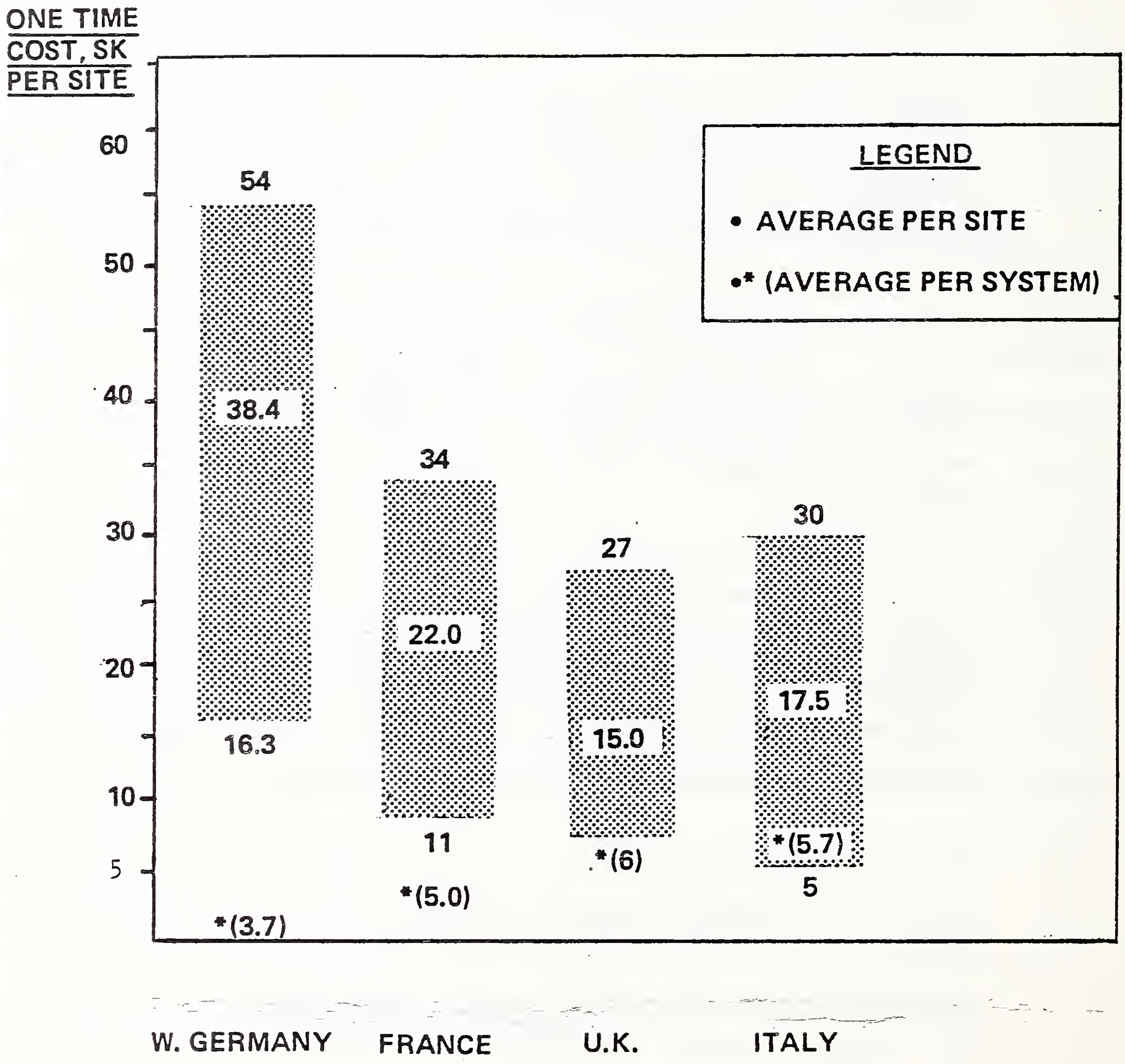

EXHIBIT VIII - 2

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IBM will continue to provide sufficient system software to support the product and to gain a steady add-on revenue. At an average one-time charge of $3,000 for an EDX system and approximately $7,400 for an RPS system, IBM is earning around 8% of total purchase price from system software. Besides this, at the predicted IBM assist levels (see Section V), IBM will be gaining between another 6-10% of purchase price from application support. Further involvement would be to the detriment of other members of GSD's (and also DPD's) product lines. Even IBM has to set priorities between competitive demands for resources.

- However, it is unrealistic to expect IBM to make a policy statement on application software support as this would be tantamount to:
    - declaring that it is not attempting to gain revenue from certain areas of Series/1 services,
    - openly handing over to third parties the responsibility for the implementation of working systems.

## A. TURNKEY IMPLEMENTATION

- Exhibit VIII-3 summarises the hardware revenues derived from Series/1 shipments from 1978 through 1982. The revenues are split between IBM and the OEM vendors, and are shown broken down by country and also aggregated for the whole of Western Europe.

- The analysis is based upon the percentages of cases in which system houses implement user systems on an OEM basis. These percentages were given with the country market forecasts in section V.

## SERIES/I HARDWARE REVENUES 1978 - 1982

| COUNTRY | VENDOR | ANNUAL REVENUES ($M) | | | | |
|---|---|---|---|---|---|---|
| | | 1978 | 1979 | 1980 | 1981 | 1982 |
| W.GERMANY | IBM | 9.4 | 52.8 | 160.3 | 259.2 | 205.6 |
| | OEMs | 1.9 | 9.3 | 30.5 | 38.7 | 25.4 |
| FRANCE | IBM | 8.0 | 40.1 | 124.2 | 197.5 | 145.2 |
| | OEMs | 1.4 | 8.8 | 25.5 | 37.6 | 19.8 |
| UK | IBM | 7.4 | 33.1 | 96.0 | 147.9 | 111.3 |
| | OEMs | — | 2.5 | 8.4 | 14.6 | 9.7 |
| ITALY | IBM | 6.9 | 25.7 | 79.6 | 123.9 | 89.1 |
| | OEMs | — | 2.9 | 9.8 | 16.9 | 9.9 |
| OTHERS | IBM | 10.4 | 45.9 | 124.5 | 176.3 | 109.6 |
| | OEMs | 0.9 | 6.1 | 21.0 | 27.4 | 16.9 |
| WESTERN EUROPE | IBM | 42.1 | 197.5 | 584.8 | 904.8 | 660.8 |
| | OEMs | 4.2 | 29.5 | 95.2 | 135.2 | 81.7 |

EXHIBIT VIII-3

- The total West European revenues have been taken from the minicomputer forecasts shown in Exhibit IV-9. The figures for 1982 have been inserted using an average system hardware price of $55,000.

- The average hardware prices for the earlier years are :

  - 1978 $49,400
  - 1979 $51,000
  - 1980 $59,000
  - 1981 $54,000

- The revenues for other countries, outside the four major EEC nations, have been calculated by subtraction from the European totals, and split between IBM and the OEMs using the percentages forecast for the whole continent.

- The total market available to OEMs in 1981, the peak year, will be $135M, of which 11% or $15M will be turned over by the software houses already in the market. It is hard to think of a clearer indication of the business opportunity which that sum represents.

- The assumption has been made that OEMs will offer systems at the same price levels as IBM. Any discounts obtained on PCM peripherals will accrue to the OEM and not be passed on to the end-user.

- The forecasts exclude maintenance revenues.

## B. SYSTEM SOFTWARE

- Basic system software will be supplied for Series/1 configurations either by IBM or by the OEM system houses. The software may be of IBM manufacture or come from a system house source, which may or may not be the same as the OEM supplying the hardware. In rare cases, it may be necessary for an OEM supplier to commission or write himself special purpose supervisory software to satisfy the needs of a particular customer. At the present time, a complex multi-processor configuration would require supervisory scheduling software, if real-time resource allocation to individual processors was required.

- It is expected that IBM's range of system software will satisfy the majority of customer requirements particularly for the smaller configurations destined for business applications. INPUT's estimate of system software revenues for IBM are based on 75% of installations requiring an EDX-based system costing approximately $3,200 and the remaining 25% an RPS-based system charged at around $7,400. This represents a reversal of the situation found from INPUT's survey users. This prediction is justified by:

  - the fact that EDX has been on offer for a shorter time,

  - the policy of selling EDX-based systems which GSD has now adopted.

  A weighted average of $4,250 worth one-time charges per system sold by IBM was used to calculate IBM's annual software revenues from 1978 through 1982.

- Annual revenues of system software for the system and software houses are based on:

  - an average one-time charge of $2,000 for each system supplied by OEM,

  - the same charge of $2,000 being applied to 10% of users who purchase their systems direct from IBM.

  INPUT believes that this gives a reasonably accurate indication of the costs of system software to the end-user, though it does not so accurately reflect the relationships which may be built up between system software specialist houses and the more numerous application software houses. Furthermore, it should be noted that many software houses will build system development software tools which are not directly charged to the customer, but are amortised over a number of sales of application systems.

## SERIES/1 SYSTEM SOFTWARE
## CHARGES TO END-USERS – 1978 THROUGH 1982

| COUNTRY | VENDOR | ANNUAL REVENUE ($M) | | | | |
|---|---|---|---|---|---|---|
| | | 1978 | 1979 | 1980 | 1981 | 1982 |
| W.GERMANY | IBM | 0.8 | 4.4 | 11.4 | 20.3 | 15.0 |
| | OEMs | 0.1 | 0.6 | 1.6 | 2.4 | 1.7 |
| FRANCE | IBM | 0.7 | 3.3 | 8.9 | 15.5 | 10.6 |
| | OEMs | 0.1 | 0.5 | 1.3 | 2.1 | 1.2 |
| UK | IBM | 0.6 | 2.8 | 6.8 | 11.6 | 8.1 |
| | OEMs | — | 0.2 | 0.6 | 1.1 | 0.8 |
| ITALY | IBM | 0.6 | 2.1 | 5.7 | 9.7 | 6.5 |
| | OEMs | — | 0.2 | 0.6 | 1.1 | 0.7 |
| OTHERS | IBM | 0.9 | 3.8 | 8.9 | 13.8 | 8.0 |
| | OEMs | 0.1 | 0.4 | 1.1 | 1.7 | 1.0 |
| WESTERN EUROPE | IBM | 3.6 | 16.4 | 41.7 | 71.0 | 48.2 |
| | OEMs | 0.3 | 1.9 | 5.2 | 8.4 | 5.4 |

EXHIBIT VIII-4

- The annual revenues for this class of software are depicted in Exhibit VIII-4. As expected, the IBM revenue exceeds the OEM by a considerable factor, which averages in forward years somewhere between 8 and 9 when considering the total annual shipments. The IBM revenue, which arises from the policy of unbundling, is thus a not insignificant item.

- As expected from the graph of hardware sales, the revenue peaks for both vendors in 1981, reaching $71M for IBM and $8.4M for the OEMs. At this level of business, it is not an item for system houses which is going to produce sufficient added value to alone justify entry into the Series/1 field. Rather, development of system software forms at best a self-financing means of equipping a software team with the necessary familiarisation and experience to make market entry viable and credible. On the other hand, the figures shown in Exhibit VIII-4 do not include any revenues gathered from outside Western European by products developed for Series/1 projects within Europe. Therefore sales to the US and the Middle East, for example, might alter the picture described here in the cases of international system houses, gathering revenue worldwide.

- For systems/software houses limited to the European market, system software on its own does not justify market entry. System software must be considered primarily as a platform for launching market entry either as a turnkey OEM supplier or an application software vendor or both.

## C. APPLICATION SOFTWARE

- Application software has traditionally been the last system module to be produced to the satisfaction of the end-user seeking a computer solution to his administrative or technical problem. IBM with Series/1 has done nothing to break with that tradition. Application software was minimal when Series/1 was launched; today in Europe there are a few hundred reference sales, but true to form, IBM is relying on the users themselves or the software houses to supply the bulk.

## SERIES/1 APPLICATION SOFTWARE REVENUES - 1978 THROUGH 1982

| COUNTRY | VENDOR | ANNUAL REVENUE ($M) | | | | |
|---|---|---|---|---|---|---|
| | | 1978 | 1979 | 1980 | 1981 | 1982 |
| W.GERMANY | IBM | 0.3 | 3.0 | 10.7 | 19.1 | 15.7 |
| | SSH | 1.6 | 7.5 | 18.3 | 25.0 | 19.4 |
| FRANCE | IBM | 0.4 | 3.1 | 10.8 | 18.8 | 13.9 |
| | SSH | 0.5 | 2.7 | 9.6 | 16.0 | 12.5 |
| UK | IBM | 0.3 | 2.1 | 7.1 | 12.4 | 9.7 |
| | SSH | 0.6 | 2.6 | 8.4 | 15.0 | 12.1 |
| ITALY | IBM | 0.7 | 2.7 | 7.9 | 12.4 | 8.7 |
| | SSH | 0.3 | 1.9 | 8.2 | 14.6 | 10.7 |
| OTHERS | IBM | 0.5 | 3.3 | 10.5 | 16.3 | 10.6 |
| | SSH | 0.6 | 2.9 | 9.3 | 13.9 | 9.6 |
| WESTERN EUROPE | IBM | 2.2 | 14.2 | 47.0 | 79.0 | 58.6 |
| | SSH | 3.6 | 17.6 | 53.8 | 84.5 | 64.3 |

N.B. SSH = SYSTEMS OR SOFTWARE HOUSE

EXHIBIT VIII-5

- The necessary software will be provided by:
    - tailored systems designed and programmed for a user,
    - pre-constructed "package" products which may require customising for any one application,
    - a mixture of the two methods.
- The fulfillment of the total European requirement presents for the services industry the best though not the biggest of the opportunites within the Series/1 sector. Exhibit VIII-5 summarises the growth of the applications market from 1978 through 1982. Even in the peak year of 1981, software sales are only 94% of OEM hardware sales; nevertheless the amount of added value which this component can bring to the average service company is likely to equal or exceed that of hardware sales because:
    - volume discounts are not offered on hardware,
    - software companies still see their main priority as a business, in "keeping the mouths fed" of their analysts and programmers.
- The forecasts have been estimated on the basis of the following assumptions:
    - the percentages of installations for which third parties provide software are those given in the Installation Support Mix exhibits in section V,
    - the percentages used for the other unsurveyed countries were those of France which appeared to be nearest to the weighted European average,
    - application software and support were assumed to earn some 40% of the total hardware cost, (i.e. excluding system software and hardware maintenance),

## SOFTWARE ANNUAL REVENUES AND GROWTH RATES

## COMPARED TO THE TOTAL SERVICES MARKET 1978 - 1982

| COUNTRY | 1978 REVENUE |  |  | 1982 REVENUE |  |  | AVERAGE ANNUAL GROWTH RATE 1978-82 |  |
|---|---|---|---|---|---|---|---|---|
|  | SERIES/1 |  | MARKET* | SERIES/1 |  | MARKET* | SERIES/1 | MARKET* |
|  | $M | % | $M | $M | % | $M |  |  |
| W.GERMANY | 1.7 | 0.8 | 217 | 21.1 | 7.4 | 287 | 88% | 7% |
| FRANCE | 0.6 | 0.2 | 247 | 13.7 | 2.3 | 603 | 119% | 25% |
| UK | 0.6 | 0.3 | 195 | 12.9 | 2.7 | 476 | 115% | 25% |
| ITALY | 0.3 | 0.2 | 151 | 11.4 | 3.9 | 293 | 148% | 18% |
| OTHERS | 0.7 | 0.2 | 344 | 10.6 | 1.3 | 841 | 97% | 25% |
| WESTERN EUROPE | 3.9 | 0.3 | 1154 | 69.7 | 2.8 | 2500 | 106% | 21% |

*TAKEN AS SOFTWARE PRODUCTS AND PROFESSIONAL SERVICES

EXHIBIT VIII-6

  - where IBM or third party was in an assist situation, the revenue earned would be 50% of that where they were doing all the work, i.e. they would be sharing with the user staff or the other party, and the yield would be 20% of hardware cost.

- To assess the value of entering the Series/1 market, comparisons were made between the percentage of the services market formed by Series/1 software in 1978 and that which it will form in 1982. Also compared were the average annual growth rates for the Series/1 software sector and the market as a whole. For the purposes fo these comparisons, system and applications software were aggregated, but OEM hardware sales were ignored since they represent a segment of the hardware market which has been intercepted by third parties. IBM's revenues were excluded in all cases. The results of the analyses are shown in Exhibit VIII-6.

- The lowest average growth rate is for West Germany which at 88% is still very high; the highest growth is found to be in Italy at 148%. This is explained by the fact that West Germany is currently the most highly developed market for systems houses with Series/1.

- By contrast, West Germany has the highest revenue in 1982 both in absolute terms and as a percentage of the software and professional services market. To a degree, however, this shows the relative lack of development of software/services in that country or viewed another way the relative maturity of their users. In either case Series/1 offers a significant market in West Germany for systems/software houses.

- All other countries have high annual growth rates for the sector, and the increase in market share of the Series/1 is in their case also non-trivial. The questions which remain unanswered are: "Will the software industry be aware of the opportunity ?"and "Will the industry be able to gear itself up sufficiently quickly, to take advantage of it?" The evolution of the predicted future for Series/1 is very closely allied to the success of the computer service companies in coming to grips with this opportunity.

# APPENDICES

1. Definitions
2. User Questionnaire
3. Competitor/PCM/Systems House Questionnaire
4. Sample List of Series/1 Users Interviewed
5. Exchange Rates Used in the Report
6. IBM Series/1 Hardware Catalogue
7. IBM Series/1 Software Catalogue
8. Profiles of IBM's Services Activities
9. Series/1 Systems Market Entry by a Large Software/ Consultancy Group
10. Series/1 Systems Market Entry by a Medium Sized Services Company
11. Sample Series/1 Software Products Currently Available
12. Strategy Comments from European Systems Houses with Series/1 Experience

# 1. DEFINITIONS

# 1. DEFINITIONS

## APPENDIX 1

## DEFINITIONS

- A Small Business Computer, for the purpose of this study, is a system that is built around a Central Processing Unit (CPU), and that has the ability of utilizing at least 20M bytes of disk capacity, provides multiple CRT work stations, and offers business-oriented system software support.

- Software Products are systems and applications packages that are sold to computer users by equipment manufacturers, independent vendors, and others. They include fees for work performed by the vendor to implement a package at the user's site.

- A Systems House integrates hardware and software into a total turnkey system to satisfy the data processing requirements of the end user. It may also develop system software products for license to end users.

- A Turnkey System is composed of hardware and software integrated into a total system designed to fulfill completely the processing requirements of one or more applications.

- An End User may buy a system from the hardware supplier(s) and do his own programming, interfacing and installation. Alternately, he may buy a turnkey system from a manufacturer, systems house or hardware integrator.

- A Hardware Integrator develops system interface electronics and controllers for the CPU, sensors, peripherals and other ancillary hardware components. He may also develop control system software in addition to installing the entire system at the end user site.

- A Small Business Computer Manufacturer builds its system around a proprietary CPU and provides systems software. It may make or buy peripheral equipment and semiconductor devices. Distribution to the end user may be through its company field sales offices, a network of distributors, or both.

- A Distributor purchases the small business computer on an OEM basis from the manufacturer and markets it to the end user. It may or may not provide a turnkey system.

- Peripherals include all input, output, and storage devices, other than main memory, which are locally connected to the main processor and are not generally included in other categories, such as terminals.

- A Minicomputer is usually a 12, 16 or 18 bit computer which is provided with limited applications software and support an represents a portion of a complete larger system.

- Distributed Data Processing (DDP)

  - INPUT was unable to find a consensus among both users and vendors as to a definition of DDP. It appears to be a concept that is uniquely structured to satisfy individual vendor and user requirements.

  - Nonetheless, as a result of extensive work in this area, INPUT offers the following hybrid definition:

    "Distributed processing is the deployment of programmable intelligence in order to perform data processing functions where they can be accomplished most effectively, through the electronic interconnection of computers and terminals, arranged in a telecommunications network adapted to the user's characteristics".

- Computer Services are services provided by vendors that perform data processing using vendor computers or assist users to perform such functions on their own computers.

- Processing Modes are of three types: Facilities Management, Remote Computing Services, and Batch Services.

  - Facilities Management (FM) is the management of all or part of a user's data processing functions under a long-term (not less than one year) contract. To qualify, the contractor must directly plan and control, as well as operate, the data processing facility provided to the user on-site through communications lines or in mixed mode. Simply providing resources, even though under a long-term contract and/or for all of a user's processing needs, does not qualify as FM.

- Remote Computing Services (RCS) are the provision of data processing to a user by means of terminals at the user's site(s) connected by a data communications network to the vendor's central computer. The three sub-models of RCS are :

    - o INTERACTIVE (Time-sharing) is characterized by interaction of the user with the system, primarily for problem solving time-sharing, but also for data entry and transaction processing - the user is on-line to the program/files.

    - o REMOTE BATCH is where the user hands over control of a job to the vendor's computer, which schedules job execution according to priorities and resource requirements.

    - o DATA BASE is characterized by the retrieval of information from a vendor-maintained data base - this may be owned by the vendor or a third party.

- Batch Services include data processing performed at vendors' sites of user data which has been physically transported (as opposed to electronically by communications lines) to those sites. Data entry and data output services, such as COM processing, are also included.

o Professional Services include management consulting related to EDP, systems consulting, systems design and programming, and other professional services are included in this category. Services can be provided on a basis of : "Time and Materials," whereby the user pays for the time used of an individual on a daily or other fixed rate, or "Fixed Price," where the user pays a fixed fee for a specific task or series of tasks.

o Processing Services encompass FM, RCS and Batch Services : They are categorized by type of service, as distinguished from mode of service, bought by users as follows :

- GENERAL BUSINESS services are processing services for applications that are common to users across industry categories. Software is provided by the vendor; this can be a complete package, such as a payroll package, or an application "tool", such as a budgeting model, where a user provides much of the customizing of the finished product it uses. General business processing is often repetitive and transaction oriented.

- SCIENTIFIC AND ENGINEERING services are the processing of scientific and engineering problems for users across industries. The problems usually involve the solution of mathematical equations. Processing is generally problem solving and is non-repetitive, except in the sense that the same packages or "tools" are used to address different, but similar, problems.

- SPECIALTY APPLICATIONS services provide processing for particular functions or problems unique to an industry or industry group. The software is provided by the vendor either as a complete package or an application "tool" that the user employs to produce its unique solution. Specialty applications can be either business or scientific in orientation; data base services where the vendor supplies the data base and controls access to it (although it may be owned by a third party) are also included under this category. Examples of specialty applications are : seismic data processing, numerically-controlled machine tool software development, and demand deposit accounting.

- UTILITY services are those where the vendor provides access to computer and/or communications network with basic software that enables any user to develop its own problem solution or processing system. These basic tools include terminal handling software, sorts, language compilers, data base management systems, information retrieval software, scientific library routines, and other systems software.

# 2. User Questionnaire

# 2. User Questionnaire

APPENDIX II

## USER QUESTIONNAIRE

## IBM SERIES/1 SURVEY

EUR-S1-1978 ________

Country ________

Int No ________

1. Did you buy Series/1 Systems from:

IBM ________

A systems or integration house (name): ________

Other (name) ________ ________

2. As of 8-1-78, how many Series/1s do you have:

a) installed: ________

b) on order: ________

3. What is the installation schedule of those on order?

| | Models | Quantity | Scheduled Date | Location |
|---|---|---|---|---|
| a) | | | | |
| b) | | | | |
| c) | | | | |
| d) | | | | |

4. What Series/1 configuration(s) have you ordered? (Indicate if any are non-IBM or non-plug compatible peripherals.)

| Quantity | Main Memory (Bytes) | Disk or Diskette (Bytes) | Printer (120 cps) | CRT Display | Communications (Describe) | Other | Tot Uni Cos |
|---|---|---|---|---|---|---|---|

5. What are your estimated Series/1 requirements over and above those on order (as far as you are able)?

1978: ____________ units

1979: ____________ units

1980: ____________ units

1981: ____________ units

6. What delivery time are you being quoted on the Series/1? (months):

7. What applications are being performed? (Please name and indicate "new" (N) or "old" (O).)

a)

b)

c)

d)

e)

8. In order of priority, what will be the new applications you will develop or require? (Indicate "new" (N) or "old" (O).)

| | Priority | Date Required | Application | N/O |
|---|---|---|---|---|
| a) | | | | |
| b) | | | | |
| c) | | | | |
| d) | | | | |

9. Is your Series/1 programming done:

in-house

by IBM

outside software house

other (please describe) ______________________________

10. Who will do future programming?

in-house

by IBM

outside software house

other (please describe) ______________________________

11. If programming is being/was done by an outside software house, please indicate:

a) Name:

b) Location:

c) Who recommended:

d) Degree of satisfaction: 1 2 3 4 5
(1 = poor, 5 = outstanding)

12. What is/was the programming cost? $ ______________

13. If programming is/was done in-house:

a) What software is/was used? (assembler, operating system, languages processor, distributed processing, etc)? __________

______________________________________________

b) Would you have preferred using another type of software that was not available? ______________________________

c) Are you concerned about the system's limit on memory size? _____

______________________________________________

d) Are you concerned about the lack of instruction set compatibility between the Series/1 and other IBM equipment? ____________

______________________________________________

14. If future programming will be done in-house, do you plan to use IBM's recently announced PL 1?

Yes

No

a) Why?

b) What features do you like?

c) What features do you dislike?

15. a) Who made the final decision on buying the Series/1? (Title) ______________________________

b) Are you an "IBM shop"? Yes No

c) Do you think IBM is committed to the minicomputer business?

______________________________

______________________________

16. a) Why was the Series/1 selected? ______________________________

______________________________

b) Were any buyer incentives offered (eg engineering assistance, software development, royalties on software you developed, publicity, discounts or other financial incentives, machine loan other)? ______________________________

______________________________

______________________________

17. What other products did you consider or evaluate and how did you rank them?

| | Rank | Manufacturer | Product |
|---|---|---|---|
| a) | | IBM | SERIES/1 |
| b) | | | |
| c) | | | |
| d) | | | |

18. Were you contacted by a US, European or Japanese competitor of the Series/1?

a) Yes

b) No

c) If yes, which companies?: ______________________________

______________________________

19. What is your attitude toward buying from a foreign manufacturer? (ie Japanese, US or non-domestic European).

Would not consider them as a vendor.

Would consider and evaluate them as if they had a domestic operation.

Comments ______________________________

______________________________

______________________________

20. a) What other Series/1 users/references did you talk to?

| Individual | Company | City |
|---|---|---|
| | | |
| | | |
| | | |

b) What other users do you know of in addition to the above?

______________________________

______________________________

______________________________

21. Are you happy that you selected the Series/1?

Yes

No

Too early to tell

22. Evaluate IBM's local support capability: 1 2 3 4 5
(1 = poor, 5 = outstanding)

23. What do you like best? (strengths) ______________________________

______________________________

24. What do you like least? (weaknesses) ______________________________

______________________________

25. Since your selection of the Series/1, have any other minicomputer vendor announcements (product or price) had any effect on your decision?

Yes

No

If "yes", describe: ____________________

____________________

____________________

26. a) Would you consider purchasing non-IBM peripherals and memory for your Series/1 system:

| | Yes | No | Comment |
|---|---|---|---|
| Mainframe memory | | | ____________ |
| Line printers | | | ____________ |
| Disk drives | | | ____________ |
| Other (describe) | | | ____________ |

b) What service and maintenance requirements would you have for these non-IBM add-ons: ____________________

____________________

27. Will you require additional mainframe memory capacity on presently installed system(s)?

Yes

No

28. If "yes",

a) quantity of units involved: ____________________

b) size of additional memory: ____________________

c) do you have a preference for: static RAM boards

dynamic RAM boards

no preference

29. What percentage price reduction do you require for buying non-IBM mainframe memory or peripherals? (circle)

a) 10%
b) 10-20%
c) 20-30%
d) 30-40%
e) 40-50%
f) 50%

30. IBM does not supply memory with Error Correction Code (ECC). Would you be willing to pay a premium for ECC?

Yes, if single bit correction

Yes, if double bit detection

Yes (either)

No

31. What additional Series/1 product announcements do you think IBM will make over the next 18 months?

a) Hardware

b) Software

c) Other

32. What is the basis for your opinion?

IBM salesman said so

Read it in a journal or magazine

Other (identify) ______________________________

______________________________

33. What other minicomputers have you in place?

| Quantity | Manufacturer | Model and Configuration | Year of Installation | Applications |
|---|---|---|---|---|

# 3. Competitor/PCM/Systems House Questionnaire

## 3. Competitor/PCM/Systems House Questionnaire

APPENDIX III

## HARDWARE/SYSTEMS HOUSE

## COMPETITOR QUESTIONNAIRE

## IBM SERIES/1 SURVEY

Eur-S1-1978 ______________

Company ______________

Country ______________

Contact ______________

Title ______________

BOTH 1. a) In what markets do you compete with the Series/1?

b) In what situations have you won or lost? And for what major reason, in the user's eyes?

| Won | Lost |
|---|---|

BOTH 2. What product announcements have you made in response to the Series/1?

a) Hardware

b) Software —

c) Price Change

d) Can you give some examples of users who chose your product over the Series/1 in response to such announcements?

BOTH 3. In what Industry sector is the Series/1 most successful, and why?

BOTH 4. What new product announcements do you expect IBM to make on the Series/1? Have the recent announcements changed the product's effectiveness?

a) Hardware

b) Software

BOTH 5. In your opinion, how desirable would each of the following capabilities or features be for the Series/1? Please check one column for each row.

| Feature/Capability | Not Required | Slightly Desirable | Moderately Desirable | Significantly Desirable |
|---|---|---|---|---|
| COBOL | ____ | ____ | ____ | ____ |
| APL | ____ | ____ | ____ | ____ |
| FORTRAN | ____ | ____ | ____ | ____ |
| PL/1 | ____ | ____ | ____ | ____ |
| BASIC | ____ | ____ | ____ | ____ |
| RPG | ____ | ____ | ____ | ____ |
| CODASYL-type DBMS | ____ | ____ | ____ | ____ |
| DBMS oriented to distributed data processing | ____ | ____ | ____ | ____ |
| Time-Sharing | ____ | ____ | ____ | ____ |
| Transaction-oriented display system | ____ | ____ | ____ | ____ |

BOTH 6. Has Series/1 had/or will have any effect on your volume of business?

| | +/(-) | Product(s) |
|---|---|---|
| 1978: | % | |
| 1979-81: | % | |

BOTH 7. What percentage of this country's total market do you think the Series/1 will capture?

| Year-end | |
|---|---|
| 1978: | % |
| 1981: | % |

BOTH 8. What do you estimate will be the market for the Series/1 in this country?

| | 1978 | 1979 |
|---|---|---|
| a) Customer: | | |
| b) Units: | | |
| c) Revenue: | | |

BOTH 9. What, in your view, are the Series/1's main -

a) Strengths

b) Weaknesses

OTH 10. How many Series/1 do you estimate have been installed as of 8/1/78 in this country?

11. What do you estimate is IBM's monthly ship rate for the Series/1?

OTH 12. And estimated backlog?

ARDWARE NLY 13. Have you lost any salesmen to IBM's Series/1 salesforce?

ARDWARE NLY 14. Describe your salesman's compensation plan and quota:

HARDWARE ONLY 15. How do you compare with the Series/1 salesman's plan?

HARDWARE ONLY 16. How many salesmen do you have in the field? By region:

BOTH 17. What are the opportunities open to you, as a result of the IBM Series/1, for:

a) peripheral add-ons ______________________

______________________

b) terminal add-ons ______________________

______________________

c) applications software ______________________

______________________

BOTH 18. What are your feelings toward the use of third party memory and peripherals? ______________________

______________________

BOTH 19. How would you like to see the maintenance of these devices handled?

______________________

______________________

## 4. Sample List of Series/1 Users Interviewed

## 4. Sample List of Series/1 Users Interviewed

# APPENDIX 4.-

## SAMPLE LIST OF SERIES/1 USERS INTERVIEWED

## SEGMENTED BY TYPE AND GEOGRAPHIC LOCATION

| COMPANY NAME | USER TYPE | | GEOGRAPHIC LOCATION | | | |
|---|---|---|---|---|---|---|
| | END USER | SOFT/SYST. HOUSE | W.G. | FRANCE | ITALY | UK |
| GONDRAND | X | | | | X | |
| H.F. REEMTSA | X | | X | | | |
| CYPHER COMPUTERS LTD | | X | | | | X |
| MESSER GRIESHEIM | X | | X | | | |
| GENTY CATHIARD | X | | | X | | |
| MONTEDISON | X | | | | X | |
| SOPRA | X | X | | X | | |
| THOMAS COOK | X | | | | | X |
| MOFFA | X | | X | | | |
| MARZOTTO | X | | | | X | |
| ORGAMEDA | | X | X | | | |
| HAZET-WERKE | X | | X | | | |
| HERMAN TRAUB | X | | X | | | |
| SNIA VISCOSA | X | | | | X | |
| MBP | | X | X | | | |
| ASSOCIATED PORTLAND CEMENT | X | | | | | X |
| MARS GROUP | X | | | | | X |
| LANEROSSI | X | | | | X | |
| HADRIAN COMPUTER SERVICES LTD | | X | | | | X |
| GERDES | X | | X | | | |
| CERF | X | | | X | | |
| CEMENTARIA DI CASSAGO | X | | | | X | |
| SYSTEMS PROGRAMMING | | X | | | | X |
| KEIPER | X | | | X | | |
| SOCIETE PROMODES | X | | | X | | |
| ANIC | X | | | | X | |

## APPENDIX 4 (CONTINUED)

## SAMPLE LIST OF SERIES/1 USERS INTERVIEWED

## SEGMENTED BY TYPE AND GEOGRAPHIC LOCATION

| COMPANY NAME | USER TYPE | | GEOGRAPHIC LOCATION | | | |
|---|---|---|---|---|---|---|
| | END USER | SOFT/SYST. HOUSE | W.G. | FRANCE | ITALY | UK |
| BIESTERFELD & CO | X | | X | | | |
| G.B. HIGGINS DATA SERVICES LTD | | X | | | | X |
| STADTWERKE-HANNOVER | X | | X | | | |
| AMBA SOFTWARE | | X | | | | X |
| TUBE INVESTMENTS | X | | | | | X |
| OSRAM | X | | X | | | |
| AMERICAN MEDICAL INTERNATIONAL | X | | | | | X |
| CASSA DI RISPARMIO DI GENOVA | X | | | | X | |
| RAFFINERIA DEL PO | X | | | | X | |
| ALCAN | X | | | | X | |
| SECAPA | | X | | X | | |
| NORD RHEIN-WESTPHALEN | X | | X | | | |
| ALLIED BREWERIES | X | | | | | X |
| INCINERITORE DI MILANO | X | | | | X | |
| COGRAM | | X | | | X | |
| MEDATA | X | | X | | | |
| NESTLE | X | | | | | X |
| DATAMONT | | X | | | X | |
| AEROPORTO DI ROMA | X | | | | X | |
| HEINRICH MACK | X | | X | | | |
| STEWART WRIGHTSON | X | | | | | X |
| PRAGMA | | X | | | X | |
| ITALSIDER | X | | | | X | |
| PHARMA BAUER | X | | X | | | |
| SIPE | X | | | | X | |
| ZOLLET | X | | | | X | |
| SEOTS | | X | | | X | |

## 5. Exchange Rates Used in the Report

## 5. Exchange Rates Used in the Report

# APPENDIX 5

## EXCHANGES RATES USED IN THIS REPORT

| ONE DOLLAR EQUALS : | | |
|---|---|---|
| WEST GERMANY | 1.84 | DEUTSCHMARKS |
| FRANCE | 4.23 | FRANCS |
| UNITED KINGDOM | 0.50 | POUNDS STERLING |
| ITALY | 815.00 | LIRE |

# 6 IBM SERIES/1 HARDWARE CATALOGUE

APPENDIX 6

## IBM SERIES/1 HARDWARE CATALOGUE AND MAJOR ENHANCEMENTS (4/77 - I/79 )

| Machine Type | Model Number | Description | Purchase Price | MMMC |
|---|---|---|---|---|
| 1060 | | Analog Input Control | $ 800.00 | $ 4.50 |
| 1065 | | Analog Output | 525.00 | 5.00 |
| 1070 | | Amplifier-Multirange | 915.00 | 5.00 |
| *1200 | | System 370 Channel Attachment | 2,175 | |
| *1300 | | Programmable Communications Subsystem Controller for Machine Types 4953, 4955, and 4959 | 2,835.00 | 27.00 |
| 1560 | | Integrated Digital Input/ Output Nonisolated | 825.00 | 14.00 |
| 1565 | | Channel Repower | 520.00 | 2.00 |
| 1590 | | Customer Access Panel | 180.00 | 1.00 |
| 1593 | | Customer Access Panel-Integrated Digital Input/ Digital Output Cable | 385.00 | .50 |
| 1594 | | Customer Access Panel-Customer Direct Program Control Adapter Cable | 270.00 | .50 |

*Enhancements since April 1977

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|  |  |  |  |
|---|---|---|---|
| 1595 | Channel Socket Adapter | 73.00 | .50 |
| 1610 | Asynchronous Communications Single-Line Control | 1,090.00 | 17.00 |
| 2000 | Communications Indicator Panel | 250.00 | 3.00 |
| 2010 | Communicaitons Power | 120.00 | 3.00 |
| 2055 | Teletypewriter Cable | 52.00 | .50 |
| 2056 | Asynchronous Local Attachment Communications Cable | 47.00 | .50 |
| 2057 | EIA Dataset Cable | 70.00 | .50 |
| 2058 | BSC/High Speed Cable | 125.00 | .50 |
| 2059 | Teletypewriter Customer Access Panel Cable | 40.00 | .50 |
| 2060 | BSC V.35/High Speed DDN Cable | 122.00 | .50 |
| * 2064/65 | TTY-EIA connector |  |  |
| 2074 | BSC Single-Line Control | 1,190.00 | 19.00 |
| 2075 | BSC Single-Line Control/ High Speed | 1,380.00 | 21.00 |
| 2090 | SDLC Single-Line Control | 1,420.00 | 19.00 |
| 2091 | Asynchronous Communications 8-Line Control | 975.00 | 13.00 |
| 2092 | Asynchronous Communications 4-Line Adapter | 1,005.00 | 30.00 |
| 2093 | BSC 8-Line Control | 1,215.00 | 13.00 |
| 2094 | BSC 4-Line Adapter | 1,245.00 | 35.00 |
| 2100 | Extension Cable | 135.00 | .50 |
| 3525 | Digital Input/Process Interrupt Nonisolated | 410.00 | 4.00 |
| 3530 | Digital Input/Process Interrupt Isolated | 695.00 | 46.00 |

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| | | | |
|---|---|---|---|
| 3535 | Digital Output Nonisolated | 355.00 | 4.00 |
| 3580 | 4962 Disk Storage Unit Attachment | 815.00 | 8.00 |
| 3581 | 4964 Diskette Unit Attachment | 730.00 | 8.00 |
| 3585 | 4979 Display Station Attachment | 955.00 | 10.00 |
| *3600 | Programmable Communications Subsystem Expansion Scanner | 1,765.00 | 15.00 |
| 3920 | Floating Point | 1,190.00 | 11.00 |
| 4450 | Forms Stand | 54.00 | N/A |
| 4540 | Rack Mounting Fixture | 55.00 | N/C |
| *4700 | Half Duplex DCE Attachment | 500.00 | 3.50 |
| *4701 | Full Duplex DCE Attachment | 415.00 | 3.00 |
| *4704 | TTY Current Attachment | 640.00 | 5.00 |
| *4706 | Data-Phone Digital Service Adapter | 960.00 | 5.00 |
| *4709 | Asynchronous Local Attachment | 525.00 | 2.50 |
| *4710 | Synchronous Local Attachment | 545.00 | 3.00 |
| *4713 | Autocall Attachment | 505.00 | 3.50 |
| *4716 | 1200 bps Asynchronous Modem Switched Network | 1,010.00 | 8.00 |
| *4717 | 1200 bps Asynchronous Modem Leased Line SNBU | 1,160.00 | 9.00 |
| *4718 | 1200 bps Asynchronous Modem Leased Line | 1,010.00 | 8.00 |

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| | | | | |
|---|---|---|---|---|
| *4721 | | 1200 bps Synchronous Modem w/Clock Switched Network | 1,040.00 | 8.00 |
| *4722 | | 1200 bps Synchronous Modem w/Clock Leased Line SNBU | 1,190.00 | 9.00 |
| *4723 | | 1200 bps Synchronous Modem w/Clock Leased Line | 1,040.00 | 8.00 |
| 4940 | | Multiplexer-Reed Relay | 650.00 | 16.00 |
| 4950 | | Multiplexer-Solid State | 715.00 | 8.50 |
| 4953 | A | Processor | 4,360.00 | 80.00 |
| | B | | 5,190.00 | 78.00 |
| | C | | 5,870.00 | 88.00 |
| | D | | 6,700.00 | 88.00 |
| 4955 | A | Processor | 6,165.00 | 77.00 |
| | B | | 6,165.00 | 77.00 |
| | C | | 7,915.00 | 87.00 |
| | D | | 7,915.00 | 87.00 |
| | E | Processor, 64KB (Maximum 256KB) | 11,000.00 | |
| | | 64KB Storage Addition | 3,800.00 | |
| 4959 | A | Input/Output Expansion Unit | 2,515.00 | 37,00 |
| | | Series/I Two Channel Switch (including console) | 2,500 | |
| 4962 | I | Disk Storage Unit | 6,895.00 | 44.00 |
| | IF | | 7,760.00 | 60.00 |
| | 2 | | 8,575.00 | 60.00 |
| | 2F | | 9,440.00 | 76.00 |
| | 3 | 13.96MB Disk | 8,595.00 | 69.00 |
| | 4 | 13.96MB Disk Plus Diskette Unit | 10,275.00 | 89.00 |
| *4963 | 58A | Primary Disk, 58MB With 131K Fixed Head | 11,420.00 | |
| | 58B | Expansion Disk, 58MB With 131K Fixed Head | 9,720.00 | |

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| | | | | |
|---|---|---|---|---|
| | 64A | Primary Disk Unit, 64MB | 10,700 | |
| | 64B | Expansion Disk Unit, 64MB | 9,000 | |
| 4964 | 1 | Diskette Unit | 2,410.00 | 17.00 |
| *4966 | | Diskette Magazine Unit | 4,705.00 | |
| 4973 | 1 | Line Printer | 8,625.00 | 85.00 |
| | 2 | | 12,425.00 | 158.00 |
| 4974 | | Printer | 2,790.00 | 34.00 |
| *4978 | | Display Station (The 4978 is an RPQ item and prices can be quoted by your IBM representative) | | |
| 4979 | | Display Station | 1,735.00 | 25.00 |
| 4982 | | Sensor Input/Output Unit | 1,655.00 | 11.00 |
| *4987 | | Programmable Communications Sybsystem Model 1 | 3,975.00 | 41.00 |
| *4990 | 1 | Communications Console | 745.00 | 2.00 |
| *4993 | 1 | Series/1-System 370 Termination Enclosure | 2,625.00 | |
| 4997 | 1A | Rack Enclosure | 870.00 | 2.00 |
| | 2A | | 1,160.00 | 5.00 |
| | 1B | | 1,025.00 | 2.00 |
| | 2B | | 1,315.00 | 5.00 |
| 4999 | 1 | Battery Backup Unit | 1,895.00 | 18.00 |
| | 2 | | 1,875.00 | 18.00 |
| 5430 | | Customer Direct Program Control Adapter | 660.00 | 11.00 |
| 5620 | | 4974 Printer Attachment | 930.00 | 3.50 |
| 5630 | | 4973 Line Printer Attachment | 940.00 | 5.00 |
| 5650 | | Programmer Console | 460.00 | 6.00 |

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| | | | |
|---|---|---|---|
| 5700 | 4973 Printer Attachment Cable Increment | 13.00 | N/A |
| 5701 | 4973 Printer Replacement Attachment Cable Basic | 82.00 | N/A |
| 5720 | 4974 Printer Replacement Attachment Cable Increment | 13.00 | N/A |
| 5721 | 4974 Printer Replacement Attachment Cable Basic | 82.00 | N/A |
| 5740 | 4979 Replacement Attachment Cable Increment | 13.00 | N/A |
| 5741 | 4979 Replacement Attachment Cable Basic | 82.00 | N/A |
| 5821 | Additional Print Belt for 4973 Model 1 or 2, 48-Character EBCDIC | 170.00 | N/A |
| 5822 | Additional Print Belt for 4973 Model 1 or 2, 64-Character EBCDIC | 170.00 | N/A |
| 5823 | Additional Print Belt for 4973 Model 1 or 2, 96-Character EBCDIC | 170.00 | N/A |
| 6305 | 4982 Sensor Input/Output Unit Attachment | 650.00 | 11.00 |
| 6315 | Storage Addition (16,384 bytes-4953 Processor) | 1,510.00 | 10.00 |
| 6316 | Storage Addition (32,768 bytes-4953 Models C and D only) | 2,425.00 | 22.00 |
| 6325 | Storage Addition (16,384 bytes-4955 Processor) | 1,750.00 | 8.00 |
| 6326 | Storage Addition (32,768 bytes-4955 Models C and D only) | 2,850.00 | 14.00 |
| 6335 | Storage Address Relocation Translator | 805.00 | 9.00 |

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|  |  |  |  |  |
|---|---|---|---|---|
| 7840 |  | Timers | 570.00 | 4.00 |
| 7850 |  | Teletypewriter Adapter | 560.00 | II.00 |
| *7900 |  | Two Channel Switch |  |  |

## ENHANCEMENTS SINCE NOVEMBER I978

|  |  |  |  |  |
|---|---|---|---|---|
| *I2I0 |  | 5250 Attachment Cards | I,879 | 5.55 |
| *I2I5 |  | 4969 Attachment | 833 | I.70 |
| *2095 |  | Programmable Communications Attachment Controller | 877.00 | 3.90 |
| *2096 |  | 4-Line Adapter for the 2095 (maximum 2) | 999.00 | II.65 |
| *4952 | A | Processor, 32KB (maximum 128 KB) | 2,927.00 | I2.75 |
|  | B |  | 3,9I4.00 | 27.70 |
| **4963 | 29A | Primary Disk, 29MB | 6,229.00 | 25.80 |
|  | 29B | Expansion Disks (up to 3) | 5,094.00 | 24.I0 |
| *4963 | 23A | Primary Disk, 23MB (with Fixed Heads) | 6,7II.00 | 35.50 |
|  | 23B | Expansion Disks (up to 3) | 5,576.00 | 33.50 |
| *4969 | 04N | Magnetic Tape Drive (36KB, 800BPI, NRZI) |  |  |
|  |  | - Controller | 2,623.00 | 23.25 |
|  |  | - Drive - maximum 4 | 5,942.00 | 37.90 |
|  | 04P | (72KB, I600 BPI,PE) |  |  |
|  |  | - Controller | 2,888 | 24.35 |
|  |  | - Drive | 6,207 | 37.90 |
|  | 04D | (Switchable as 04N or 04P) |  |  |
|  |  | - Controller | 3,02I | 27.70 |
|  |  | - Drive | 6,606 | 37.90 |

| | | | |
|---|---|---|---|
| | 07N (60KB, 800 BPI, NRZI) | | |
| | - Controller | 2,623 | 23.25 |
| | - Drive | 7,933 | 49.60 |
| | 07P (I20KB,I600BPI,PE) | | |
| | - Controller | 2,888 | 24.35 |
| | - Drive | 8,I99 | 49.60 |
| | 07D (switchable as for 07N or 07P) | | |
| | - Controller | 3,02I | 27.70 |
| | - Drive | 8,597 | 50.70 |
| *5250 | Display Station (as for System/34) | I,879.00 | |
| | with optional matrix printer. | N.K. | |
| *5760 | 5250 Attachment Cable | I44.00 | 0.30 |
| *6306 | Storage Addition (32,768 bytes - 4952 Processor ) | 290.00 | 0.60 |

# 7. IBM SERIES/I SOFTWARE CATALOGUE

# 7. IBM SERIES/I SOFTWARE CATALOGUE

## APPENDIX 7

## IBM SERIES/I SOFTWARE CATALOGUE AND

## MAJOR ENHANCEMENTS (4/77 - I/79

| Program Type | Licensed Programs | Monthly Payment | One-Time Charge |
|---|---|---|---|
| 5719-PC1 | Realtime Programming System Version 1 | $20.00 | $1,200.00 |
| *5719-PC2 | Realtime Programming System Version 2 | 25.00 | 1,500.00 |
| *5719-PC3 | Realtime Programming System Version 3 | 32.00 | 1,900.00 |
| *5719-PC4 | Realtime Programming System Version 4 | 38.00 | 2,250.00 |
| 5719-AS1 | Program Preparation Subsystem Version 1 | 18.00 | 1,104.00 |
| *5719-AS2 | Program Preparation Subsystem Version 2 | 20.00 | 1,208.00 |
| *5719-AS3 | Program Preparation Subsystem Version 3 | 22.00 | 1,320.00 |
| 5719-PL1 | PL/1 Compiler and Resident Library | 46.00 | 2,784.00 |
| 5719-PL3 | PL/1 Transient Library | 5.00 | 288.00 |
| *5719-ED1 | Series/1 Structured Programming Facility (SPF) | 210.00 | |
| *5719-CR1 | " " " " (370MVS/VTAM) | | |
| *5719-CR2 | " " " " (370MVS/TCAM) | | |
| 5719-FO1 | FORTRAN IV Compiler and Object Support Library | 14.00 | 864.00 |
| *5719-FO3 | FORTRAN IV Realtime Subroutine Library | 5.00 | 288.00 |
| *5719-FO4 | FORTRAN IV Realtime Subroutine Library Version 2 | 6.00 | 336.00 |
| 5719-LM1 | Mathematical and Functional Subroutine Library Version 1 | 7.00 | 408.00 |
| *5719-LM2 | Mathematical and Functional Subroutine Library Version 2 | 8.00 | 480.00 |

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| | | | |
|---|---|---|---|
| *5719-CA1 | Series/1-System 370 Channel Attach Program | 21.00 | 1,250.00 |
| *5719-CB1 | Series/1 COBOL Compiler and Resident Library | 62.00 | 3,700.00 |
| *5719-CB2 | Series/1 COBOL Transient Library | 5.00 | 300.00 |
| *5719-CS0 | Programmable communications Subsystem Preparation Facility | 8.00 | 500.00 |
| *5719-CS1 | Programmable Communications Subsystem Execution Support | 6.00 | 336.00 |
| *5719-CS2 | Programmable Communications Subsystem Extended Execution Support | 20.00 | 1,150.00 |
| *5719-SM1 | Series/1 SORT/MERGE | 7.00 | 400.00 |
| 5719-PA1 | Base Program Preparation Facilities | 90.00 | 2,160.00 |
| *5718-U11 | Facility Control/Power Management 1 | 130.00 | 6,240.00 |
| *5719-U12 | Facility Control/power Management 2 | 188.00 | 9,024.00 |
| *5719-U12 | Facility Control/Power Management 3 | 52.00 | 2,496.00 |

| Program Number | Programming RPQs | Monthly Charge | Paid-Up Cost |
|---|---|---|---|
| *5799-TAA | Control Program Support | $15.50 | $372.00 |
| 5799-TAL | Control Program Support Extensions I | 1.50 | 36.00 |
| 5799-TAQ | Control Program Support Extensions II | 1.50 | 36.00 |
| *5799-TBQ | Control Program Support Extended Function | 3.00 | 72.00 |
| 5799-TAH | Indexed Access Method Control Program Support | 5.00 | 120.00 |
| *5799-TBD | Control Program Support Commercial Arithmetic | 2.00 | 48.00 |

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|  |  |  |  |
|---|---|---|---|
| 5799-TAF | Binary Synchronous Communication Control Program Support | 3.50 | 84.00 |
| 5799-TAE | 4979 Display Station Control Program Support | 1.50 | 36.00 |
| 5799-TAK | 4978 Display Station Control Program Support | 6.00 | 144.00 |
| *5799-TAW | Control Program Support Disk Table of Contents | 1.00 | 24.00 |
| *5799-TAT | Control Program Support Sort/Merge | 5.00 | 120.00 |
| *5799-TAY | Control Program Support Disk Spooling | 3.00 | 72.00 |
| *5799-TBA | Control Program Support Format/Print | 3.00 | 72.00 |
| *5799-TBC | Control Program Support Auto-Call Support | 5.00 | 120.00 |
| *5799-TBB | Control Program Support Operator Station/Debug Package | 8.00 | 192.00 |
| *5799-TBE | Control Program Support 4978/4979 Display Map | 4.00 | 96.00 |

| Program Number | Realtime Programming System PRPQs | Monthly Charge | Paid-Up Cost |
|---|---|---|---|
| *5799-TBN | Series/I Indexed Access Method | $ 6.00 | $ 360.00 |
| *5799-TBP | Series/I Basic Sort | 2.00 | 120.00 |
| *5799-TBM | Series/I IBM 4978 Display Support | 3.00 | 174.00 |
| *5799-TBL | Series/I Disk Spooling | 3.00 | 150.00 |
| *5799-TBK | Series/I Remote Job Entry | 31.00 | 1,842.00 |

| Program Number | Field-Developed Programs | Monthly Charge | Paid-Up Cost |
|---|---|---|---|
| *5798-NLG | Series/I Intelligent Terminal Subsystem | $110.00 | $1,320.00 |
| *5798-NND | Series/I Event Driven Executive Basic Supervisor and Emulator | 11.00 | 650.00 |

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|  |  |  |  |
|---|---|---|---|
| *5798-NNC | Series/I Event Driven Executive Utilities | 8.50 | 500.00 |
| *5798-NNB | Series/I Event Driven Executive Macro Library | 24.00 | 1,425.00 |
| *5798-NNQ | System/370 Program Preparation Facilities for Series/I | 520.00 | 6,240.00 |
| *5798-NNR | Series/I Native Application Load Facility | 60.00 | 720.00 |
| *5798-NPY | Series/I Intelligent Data Entry System | 55.00 | 660.00 |
| *5798-NPZ | Series/I Remote Job Entry for Control Program support | 25.00 | 330.00 |
| *5798_NRP | EDX Program Preparation Facility |  |  |
| *5798-NPR | EDX Basic supervisor and emulator V.2 |  |  |
| *5798-NRO | EDX Utilities V.2. |  |  |
| *5798-NRX | EDX Macrolibrary Host |  |  |

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## ENHANCEMENTS SINCE NOVEMBER 1978

| Program Type | Licensed Programs | Monthly Payment | One-Time Charge |
|---|---|---|---|
| *5719-PC4 | Realtime Programming System Vn.4 with -Command Language Facility | 32.50 | 1,913.00 |
| -TA1 | - 5250 Support | 11.10 | 659.00 |
| -TA4 | - 4969 Support | 10.55 | 620.00 |
| 5719-AS4 | Program Preparation Subsystem Version 4 | 15.80 | 938.00 |
| *5719-AM1 | Index Access Method (IAM) for PLI and COBOL support | 9.45 | 548.00 |
| *5719-FC2 | Event Driven Executive (EDX) for FORTRAN support | 8.90 | 526.00 |
| *5719-LM3 | EDX MFSL | 5.00 | 294.00 |
| *5719-XS1 | EDX Basic Supervisor | 10.00 | 584.00 |
| *5719-UT2 | EDX Utilities | 7.20 | 438.00 |
| *5719-XX2 | EDX Program Preparation Subsystem | 9.45 | 548.00 |
| *5719-LM5 | EDX Macro Library | 17.75 | 1,060.00 |
| *5740-LM2 | EDX Macro Library Host | 48.70 | N/A |

# 8. PROFILES OF IBM'S SERVICES ACTIVITIES

# 8. PROFILES OF IBM'S SERVICES ACTIVITIES

APPENDIX 8

## PROFILES OF IBM'S SERVICES ACTIVITIES

### 1. The UK

The IBM DCS and RCS groups
(part of the Data Processing Division
of IBM United Kingdom Ltd
Itself a subsidiary of IBM UK Holdings Ltd)
P O Box 41  North Harbour  Portsmouth  Hampshire PO6 3AU

Tele: 07018 21212

Turnover Fiscal year end 1976 : £494M

Turnover Fiscal year end 1977

- IBM's Data Centre Services (DCS) and Remote Computing Services (RCS) are both part of the IBM Data Processing Division such that the actual sales performance cannot be separately identified.
- In the mid 70's the Remote Batch and Interactive Timesharing business of IBM suffered from the loss of SBC, both in term of public image and IBM management attention to the development of the European operations remaining from the takeover.
- That phase is at an end with an aggressive growth plan in the early stages of implementation. In comparison with IBM's other European markets, the UK RB and T/S revenues (of $ 16M*) are in excess of West Germany ($ 12M*) but easily exceeded by those of France ($ 22.3M*).
- Total Computer Services revenue (including Batch Services, Software Products revenue) modify this picture substantially. West Germany is the largest market with total revenues of $ 38M*, followed by France $ 35M* with the UK a distant third $ 24M*.

*INPUT Estimates

- IBM's new plan for a strong development of RB and T/S services has recently been dramatised in the specialised press by the preparation of the Warwick supercentre. This 174,000 sq ft office building and computer centre could eventually house as many as six 370/168's tied to a network of 80 high speed lines interconnecting the 10 concentrators serving the UK market.

- To date only one 370/168 has gone live with the concentrator switching customers input to either Warwick or the existing 370/155's in London, used for the Terminal Business System and Call Services. Warwick will also serve as a marketing, sales and services centre HQ for the Midlands.

- IBM continues to run Batch Bureaux in the South and the Midlands. At last count, these were:

| | |
|---|---|
| CROYDON | 2 X 370/158<br>1 X 370/168 |
| MANCHESTER | 2 X 370/145 |
| BIRMINGHAM | 1 X 370/158<br>1 X 370/135 |

- IBM's current hiring spree suggests, however, that there is to be a renewed attack by IBM on the RCS market which should be taken seriously by the top RCS vendors in the UK. (Honeywell, Comshare and ADP-NIS) due to (a) the integrated education, service and support available nationwide to users of IBM's DCS/RCS services through DP Division (b) the sheer number of salesmen that IBM is acquiring and (c) IBM's image in all that it does.

- Possibly the greatest weakness in IBM's service is the lack of performance of the 370 line in the T/S environment when compared to, say, the DEC 10. IBM must of course, use only its own hardware, which in this particular operational environment puts them at a performance disadvantage.

Key Products and Services

- In April 1975 IBM announced A S (Application System). This was designed to allow users with no programming knowledge to apply CALL to his problem. Like CALL, A S is a command driven system and runs as an integral application of CALL.

- The A S system offers several language/command modules:

    A S REPORT (used to enter report format specifications)
    A S MODEL (used to produce RPG II-like programs)
    A S FORECASTING (obvious use)
    A S GRAPH (high resolution curve plotting)

- IBM emphasizes A S as an Oliver/TABOL type language system which offers functional compatibility between the modules. Its effect is to tie users into a single problem solving language, specific to IBM, rather than offering separate single packages which place their own learning curve demands on the user.

- Separate packages continue to be offered on CALL, however, the main ones being:

| | |
|---|---|
| STATPACK | (Statistical Analysis) |
| PNA | (Network Analysis) |
| STRATPLAN | (Financial Planning) |

- STRATPLAN offers a variety of standard growth curves (linear, exponential, polynomial) which is dangerously simple. An unskilled user will not command an understanding of the theory behind these tools and so cannot appreciate the implications. (A professional will most likely want to build his own).

- CALL, IBM's T/S system, offers BASIC, FORTRAN and PL/1 as the main programming languages. Terminal Command Language covers the remote system communication, program entry/storage/execution and modification.

- There are four levels of library programs:

    User Library (Proprietary)
    One Star (Available within a company)
    Two Star (All CALL users)
    Three Star (IBM programs, available internationally, eg A S, PNA etc).

### Terminal Types

- The following terminals can be used on CALL:

    Teletype compatibles
    Communicating Magnetic Card Typewriter
    IBM 2740/1 (slow keyboard printer)
    IBM 3767 (keyboard printer, SDLC)
    IBM 3770 family (diskette, programmable, SDLC)
    IBM 2780 (RB)
    IBM System/370 (RB in 2780 mode)

Data Centre Services

- The main service of DCS is Terminal Business System geared towards the Batch/RB user who is beginning to expand into terminal-oriented applications.

- The basic strategy of TBS is to temporarily set up the user's terminal oriented applications on the IBM Data Centre and then transfer them in-house.

- DCS, therefore, is very much a staging post for IBM systems that are either being expanded or installed first time.

- There are four grades of RB services:

  Fast (Processed within 15 minutes of queue entry)
  Normal (Processed within 2 hours of queue entry)
  Overnight (Self explanatory)
  Deferred (Processed within 7 days of request or to an agreed schedule)

- Utilities include File Definition, File Loading, File Enquiry, Report Writer, File Maintenance and Utility Printing. Parameter commands such as Record and File parameters and Application Job parameters describe the content and sequence of data and processing.

- For conversational processing, Conversational Job Language (CJF) offers a language to analysts and programmers to describe the entire process they wish to accomplish. The program is then translated by a system utility and stored for retrieval/execution.

## 2. The Netherlands

IBM NEDERLAND NV
Johan Huizinglaan 263
Amsterdam
Telephone: 020 5133111

Total 1977 Sales: $9.0M

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### The Company

- IBM Nederland has it's head office in Amsterdam with it's main equipment centre at Zoetemeer and smaller centres at Arnhem, Eindhoven and Hengelo. Making their coverage of Holland almost complete except for the northern provinces.

### Key Product and Services

- Standard Programming
  Time Sharing
  Software Packages
  Custom Services (Local)
  Remote Batch
  Payroll
  Central Accounting
  Inventory Control

### Industry Markets

- IBM are specialist in the fields of construction and manufacuring and market a wide variety of packages, also applicable in other areas.

CALL

APL

USPC - For Timesharing and Remote Batch

TBS

FORECASTING - (Including program and report generators and forecasting)

## 3. Belgium

IBM DATA CENTRE DIEGEM
2 J F Kennedylaan
1920 Diegem
Telephone:(02) 720-51-80

Charles De Meyer
General Manager
Mr Richel - Centre Manager
Revenue - $ 8.3M Est
Staff - 150 Est

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### The Company

- IBM started as a remote computing service in The Netherlands in 1970, using an IBM 360 installation. Since opening in Belgium in 1971 the operation has developed from a service bureau simply structured to meet the needs of a local market, to a European network on The Netherlands centre; IBM is the most significant service bureau in Belgium, having been active in RCS since 1973. Regular re-organisation to adapt to the changing market has taken place.
- The European and International network activities have been under preparation since 1976. CALL, RAX, CRJE, RJE have all been located in the Diegem centre since 1971.

### Key Products and Services

- Main products offered:
  - VSPC
  - TSO
  - APL
  - CALL
  - AS
  - STRUDL
  - MPSX
  - OECD data banks

Revenue for interactive and remote batch is divided about equally.

# 9. Series/1 Systems Market Entry by a large Software/Consultancy Group

## 9. Series/1 Systems Market Entry by a large Software/Consultancy Group

Appendix 9

## SERIES/1 SYSTEMS MARKET ENTRY BY A LARGE SOFTWARE/CONSULTANCY GROUP

- These notes are intended as the basis of a profile of a large international systems houses activity with the IBM Series/1 minicomputer.

- Scientifc Control Systems Ltd (Scicon) has acquired a Series/1 configuration in anticipation of launching a new product/service/systems range based around IBM in general and Series/1 in particular, and has embarked on the development of software tools to support this activity. The configuration consists of:

  - Model 5 processor
  - 128K main store
  - 9.3 Mbytes of disk storage
  - Diskette drive
  - 2 x 4979 VDUS
  - Matrix printer

  Also on order are a diskette magazine and a 4978 VDU.

- The RPS operating system has been chosen as the standard on which to base turnkey systems on Series/1. "Scicon" judge that with Version 3 now available, RPS represents a good general purpose operating system, being considerably more sophisticated than EDX, which they regard as a disappointing product, probably issued to give users some alternative to RPS when the rather unsatisfactory Versions 1 and 2 were current. RPS Version 4 is expected in a few weeks, and is needed to drive the diskette magazine.

- It is "Scicon's" opinion that users without the necessary expertise have been trying to get results from a basic "starter" operating system configuration; they have, presumably, not had the know-how or staff availability to generate the most efficient system for their purposes. "Scicon" instanced that by generation of a suitable system, they have been able to reduce some assembly times by a factor of four. This was the type of edge they felt they had over in-house d.p. departments, and this opinion was shared by the market-place, if "Scicon's" overall order book is anything to go by.

- "Scicon's" move to set up in readiness for an official launch in April '79 has been made deliberately, with both marketing and software production well prepared in advance. The company regards the combination of the names of IBM and Scicon as a powerful lever for sales, but not one which can afford to go off at half-cock. In other words they want to be able to implement successful systems from day one and are not prepared to go to the market place until hardware and software gaps have been plugged by either IBM or themselves.

- The company has capability in the following functional areas of the computer services market place :

  - Software products
  - Engineering support (including interfaces and special systems)
  - Consultancy
  - Management sciences
  - Communications and control systems
  - Business and other Information systems.

  A new section has been set up to build and service systems based on IBM equipment, and this section's work is to be spearheaded by a Series/1 capability.

- Series/1 will be offered initially on a turnkey systems basis to the energy industry as a whole. This specialisation by industry is a serious, selective use of marketing and sales resources. Though it does not preclude the company from accepting orders for systems for other industries, it means that there are currently no plans to solicit orders from other sources.

The energy-industry is large, the company has a lot of experience in oil as a sector of that whole and therefore expects to be dealing with large organisations and sizeable systems where the lack of volume discounts from IBM will not affect the outcome of sales in the same way as it might for small business users.

In the oil sector, systems will be offered for :

- business applications,
- control applications,
- data and telecommunications,

at different types of establishment or site :

- refineries,
- depots
- rigs
- tankers.

- Being international "Scicon" is prepared to market and support systems worldwide but operationally this is easiest in Europe, North America and the Middle East.

- Revenue expectations are such that Series/1 must contribute its share towards the company target for turnkey systems, which runs at hundreds per annum. More specifically, a target of 100 processor-systems per year within 3 years is anticipated. Multiple systems for large customers will provide a proportion.

- "Scicon" is not relying on IBM to introduce them to prospects. They have appointed a Marketing Manager dedicated to the energy market. Self-reliance is accepted and welcomed in preference to treading in IBM footsteps. Liaison with IBM is via GSD (General Systems Division); "Scicon" welcomes IBM's new structure whereby Series/1 is sold alongside all other GSD products by the GSD salesmen. Some reservation was expressed with regard to DPD (Data Processing Division) being allowed to sell only EDX-based Series/1 configurations, as these could prove inadequate to the end-user.

- Hardware policy is in general to provide IBM hardware configurations. PCM peripherals would be provided if requested, but only terminals or special peripherals are likely to be often of non-IBM manufacture.

  "Scicon" have no desire to complicate the support and maintenance functions. Moreover, they positively approve of IBM's trend towards non-removable disks with their inherent reliability.

- Software policy reflects "Scicon's" detailed evaluation of the Series/1 product against other mini offerings. "Scicon" expressed a view we had not heard previously, which was that IBM had taken a completely fresh look at the operating system architecture required for a mini, and had come up with a non-traditional approach with their RPS operating system. In "Scicon's" view this bore the stamp of a mainframe operating system which had been implemented on a mini. Whereas other manufacturers longer established in the mini field, were having to "stretch" or enhance their systems upwards, IBM was working with its traditional large-machine requirements mentality. The macro assembler was an example quoted by "Scicon" of this new approach. Traditionally, minicomputers have required large amounts of main memory to assemble large programs. The IBM product will cope with extremely large programs in its minimum configuration of 16K bytes. Any further memory provided will be used by the assembler to improve performance. This same approach is used for the system utilities, the link editors, the text editor and the compilers.

- RPS has been chosen as the standard operating system. "Scicon" are extending this extremely powerful operating system, by providing software development and system maintenance aids which will then serve to streamline the production of clients' systems.

All the extensions are being written in Assembler for reasons of:

- efficiency
- compactness of code
- ease of access to RPS facilities
- minimisation of costs to the client (he does not need to rent a high-level language at additional cost).

- Application software will be provided in the appropriate (selected by "Scicon" or the client) high-level language or assembler. The aim is to reuse software modules across similar systems and eventually to decrease the amount of system specific software to a low percentage of total software costs. At the present time, however, "Scicon" intend to offer:

  - tailored solutions,
  - pre-built but parameterised package systems.

  As system software and standard package systems are developed, analyst/programmer teams will become more available for the tailoring/particularising of these systems for individual customers.

- Stand-alone sales of system and applications software products for Series/1 are not currently part of the marketing plan. However, this is still under discussion. Furthermore, discussions with similar systems houses in other countries with a view to reciprocal marketing arrangements are under way.

  Contract hire of systems and programming personnel to end-users for Series/1 development is not being offered as a service.

- "Scicon" feels capable of offering advanced systems e.g. multi-processor Series/1 networks, because of their previous experience with large projects.

Their engineering division has been expanded by a factor of six in the last half-year.

This is to support the increased level of turnkey business expected and reflects the company's desire to move from being a software house to being a fully-grown systems house. The corollary of this policy is that whereas in the past they have been prepared to implement any system on any machine, they are now defining more narrowly the equipment and industries with which they wish to work, and in future, energy systems which a client requires on, say, DEC equipment might very well be turned away. This is in line with the industry-wide trend to be more selective on the services offered and to be able to provide these more as pseudo-products.

- To summarise, we talked to the systems company of one of the largest computer services groups in Europe. Series/1 systems are being offered on a turnkey basis as the initial thrust of a new marketing drive on IBM equipment. Series/1's capabilities as a powerful and potentially sophisticated computer have been recognised. A well-prepared product line is being developed prior to formal launch later this year. The energy industry and its larger organisations are being targetted and an annual revenue in seven figures of dollars is expected from this source within three years. The company is using its own resources for system and application software development, except that the RPS operating system is the standard system used. Similarly, sales and marketing will not be reliant on IBM.

The group has the financial strength and technical expertise to implement the systems. Its background gives it a good position to evaluate the market in the energy industry. Success will in our opinion be dependent on the soundness of this evaluation and the appropriateness of the combined hardware/system software base which it has chosen/developed to underpin its systems offering.

# 10. Series/1 Systems Market Entry by a medium-sized Services Company

# 10. Series/1 Systems Market Entry by a medium-sized Services Company

Appendix 10

## SERIES/1 SYSTEMS MARKET ENTRY BY A MEDIUM-SIZED SERVICES COMPANY

- These notes are intended as the basis of a company profile of Gamma Business Machines Ltd a new (formed October 1978) joint venture company of the "Gamma Associates Limited" group.

- The group as a whole has undergone rapid expansion in its latest reported financial year, - approximately 400% according to published accounts to end March 1978, when a net profit before taxation of £168,000 (5.9%) on a turnover of £2.8M was achieved. This very large expansion, which takes "Gamma" into contention for a place with the larger U.K. systems houses in the "top ten", can be attributed to their policy of divisionalisation and joint ventures.

- "Gamma Business Machines Limited (GBM)" has been set up as the latest of the group's associated companies with the brief to supply turnkey systems and products based solely on the IBM Series/1 to the business systems market. It represents diversification away from "Gamma's" mainstream of hardware expertise which is DEC and the PDP11 range. "Gamma" is in fact one of the largest UK OEM houses using DEC equipment, but decided it could not ignore IBM Series/1.

- "GBM" intends to attack the commercial systems market in a flexible and pragmatic way. It is still too early for them to know the amount of growth to expect, but an initial plan has been drawn up for 18 months forward and arrangements have been made with IBM for up to 50 machines to be called off from positions reserved on the production line. They do not intend to undertake scientific or process control type systems.

Projected levels of business were not discussed. To establish the seriousness of its intentions with IBM, "GBM" has installed its own development/demonstration machine in its London office; this is a Model 5 with disk and diskette, serial printer and VDUs.

- "GBM" sees the classic split in its prospect list as between the first time uneducated users and the experienced d.p. departments now looking for distributed data processing (DDP). The first time user though a large market sector has a high initial overhead in sales and training for what are relatively low unit sale prices. The DDP users on the other hand represent multiple system prospects for correspondingly less selling and training, together with possibly national names as future reference sales. There is no doubt in "GBM's" mind which type of prospect is preferable, but there is also a keen awareness of the commercial need to generate cash quickly in the present start-up stage.

- "GBM" is also anxious to establish itself in vertical market slots based on particular applications or industries. However, it was too early days for definite decisions on this question; rather they expect specialisation to follow in the wake of initial sales and to be to a degree determined by them. INPUT felt this was a policy dictated more by necessity than choice. One area was nevertheless mentioned as a candidate for treatment as a vertical sector, - data communications. In this field, "GBM" could draw on the expertise of specialist parts of the group e.g. for hardware interfacing capability, to provide credibility.

- The company's products can be divided into two sections:

  - software products to be sold to Series/1 users with standard installation and maintenance support

  - complete turnkey systems for users looking for Series/1 based solutions.

- To provide a credible stance to the market and to give fast software delivery times, "GBM" has come to licencing arrangements with COMPUDATA a U.S. system house for two types of software products :

  - the COS/1 operating system which comes with an ANSI 74 COBOL compiler

  - a number of packages for ledger applications and sales order processing, inventory control, etc. all in COBOL.

  Furthemore, they would be prepared (but not on a speculative basis) to convert existing PDP11 packages to specific requirements. Secondly, calls are being made on Compudata for further systems to be released, particularly one for production control, to enhance competitiveness against the Burroughs B80.

  The COS/1 system is not the only operating system offered. They expect to have to install in RPS and EDX environments also. This is another example of the flexibility required of a systems house working with Series/1.

- A large percentage of turnkey systems installed are expected to have hardware installed and maintained directly by IBM. This method incurs no penalty in lost hardware discounts (because IBM do not give any), but INPUT's contact anticipated the day when IBM would offer discounts on Series/1.

- "GBM" would be taking advantage of the Series/1's non-IBM equipment interfacing facility to offer PCM peripherals:

  - VDUs,
  - printers,
  - magnetic tapes, possibly.

- Selling Series/1 was involving keeping extremely close to IBM, especially during the period when GSD (General Systems Division) takes over the sales from the central selling force who have handled the series up to now. This meant meetings about twice a week, but earned the advantage of a good knowledge of any self-impact situations which could be developing inside IBM between alternative solutions offered by DPD (Data Processing Division) and GSD.

- The company's expansion plans include retaining a central London sales office (adjacent to another of the group's divisions), but moving the systems development headquarters outside the capital to ease the problem of recruiting good systems staff. The philosophy for supply of software is to base system proposals initially on the standard products but to be prepared for modification to be shown to be necessary after in-depth investigation of client requirements. This will entail intensive familiarisation with products on the part of support/installation staff. The application products from Compudata are self-contained suites of programs. They are not susceptible to being driven by parameter insertions nor to selective integration at the module level.

- INPUT put forward the suggestion of a joint venture with an RCS (Remote Computing Services) vendor, for entry into the combination processing, or on-site computing, market. This would have the benefit of adding the RCS vendor's market stature and coverage to the system company's flexibility of approach. It could provide an ideal solution to the medium-sized company with dispersed requirements for DDP and only a small corporate workload. Whilst expressing interest in the concept, "GBM" has no plans to include this approach in its marketing strategy.

- To summarise, "GBM" is an associated company of a medium sized systems house group, which is attempting to enter the Series/1 market, because it needs to diversify away from its current single source of minis, and because it believes strongly in the future of IBM with the Series/1. It has drawn up a set of marketing tactics and has equipped itself with hardware and software products which will form the basis of the majority of its sytems. It has also looked carefully at the financial aspects of the turnkey operation. While it is too early to predict the success of the venture, the association with IBM and that company's prospect list must augur well.

# II. SAMPLE SERIES/I SOFTWARE PRODUCTS CURRENTLY AVAILABLE.

## II. SAMPLE SERIES/I SOFTWARE PRODUCTS CURRENTLY AVAILABLE.

## SAMPLE OF STANDARD APPLICATIONS AVAILABLE FROM SYSTEMS/SOFTWARE HOUSES

| PRODUCT | FUNCTION | APPROXIMATE PRICE | VENDOR |
|---|---|---|---|
| DDP/1 | Offers CRT screen formatting and data capture/storage/ management in a network environment | (a) one-time charge : $ 20K<br>(b) rental is $350/month | SYSTEMS DESIGN & DEVELOPMENT CORP. |
| DBMS | Data base management system | $ 15K | DATA TECHNOLOGY INDUSTRIES INC. |
| JDOL | Data base management system | | APPLIED COMPUTER DESIGNS INC. |
| CLASS | Computerized limited access Security System, using IBM magstripe card reader | $ 2.56K | APPLIED REALTIME SYSTEMS INC. |
| * | Suite of on-line business systems handling order entry, invoicing, A/R and general ledger | $ 4K | APPLIED COMPUTER SERVICES INC. |
| * | suite of business systems covering order entry, invoicing, A/R, A/P, general each module ledger | $ 0.6K | SPAN MANAGEMENT SYSTEMS |

## 12. Strategy comments from European Systems Houses with Series/I Experience.

## 12. Strategy comments from European Systems Houses with Series/I Experience.

# APPENDIX 12

# STRATEGY COMMENTS FROM EUROPEAN SYSTEMS HOUSES WITH SERIES/I EXPERIENCE

- The reaction of the European systems/software house community to the Series/1 has been a mixture of enthusiasm and caution,of limited investment and full-blooded committment. The S/SHs interviewed ranged from the single one-off turnkey system house to the very large 150-system contract dealers.

- There was no difficulty for INPUT in identifying those active with the Series/1 in each country : they all freely advertise their intentions in the specialised press, some with considerable fanfare. Having done so, however, many are at a loss as to what step comes next, and are having considerable difficulty in finding prospects. Others, more fortunate, have become rapidly involved in significant contracts and can look forward to business snowballing.

## A. SELECTED INTERVIEW SUMMARIES

- ORGAMEDA, in West Germany, claims to have sold more than 150 turnkey Series/1s, primarily through its warehouse automation software ; they also claim to have sold the software product itself in other similar installations. ORGAMEDA is also developing standard accounting packages. The impact of the Series/1 on business is expected to be +60% in 1978, mainly due to the fact that "the end user has no alternative than to go to the software house in many instances".

- SOPRA, in France, has its own Series/1 and supplies turnkey systems and some PCM peripherals (Datum Inc. tapes mainly). They intend to be "the largest Series/1 turnkey supplier in France", and are the exclusive vendor in France for the COS/1 COBOL compiler from Compudata, DDP/1 (Distributed Data Processing package from Systems Design and Development) and ISAM sort from Applied Realtime Systems. All three products are from U.S. software houses. SOPRA is developing their own PACHA (payroll) system and SYSCOS (Accounting) system ; in addition, they see potential in the hotel management business.

- CYPHER COMPUTERS LTD, in the U.K., are an $8M+ company using Burroughs, ICL and NCR equipment. They initially ordered 10 Series/1 but backed away from it because of the lack of IBM marketing/sales support. They nevertheless have developed an Hotel Accounting system for 200-300 beds, have done several custom packages and are looking at the brokerage market. Cypher Computers expect the Series/1 to have a significant impact on their 1978 business because "the Series/1 is a first class product, it's easy to add peripherals and there's COBOL now". However, they find IBM's approach "not good enough - there's not enough direct sales effort".

- DATAMONT, in Italy, did a thorough check on the competition before deciding to go with the IBM Series/1. In particular they examined DEC, HP, CII-HB, Siemens, Data General, and General Automation. They are in the process of developing applications for (i) data entry of accounting informations, (ii) automatic weighing (iii) personnel log-in/log-out (iv) a variety of process control applications. Datamont is the computer services subsidiary of MONTEDISON and is thus primarily interested in manufacturing applications.

- MBP, in West Germany, is developing Payroll, Receivables, Payables, Materials Management, Shop Floor control and Project control software. They have noted IBM' success in the manufacturing and Wholesale sectors in West Germany and are targeting those users as a result. The value-added for MBP is the application software, and they are critical of the absence from IBM of two items they feel would assist application development - a good operating system and a data base management system.

- HADRIAN COMPUTER SERVICES LTD, in the U.K., offers turnkey and contract programming for commercial applications on the Series/1, plus their "own" peripherals (Hazeltine terminals, Lear Siegler terminals, Centronics printers). HCS is going after the small business market, but finds the Series/1 Assembler too slow. The application market is their target for value-added.

- SIO-TS, in Italy, is a systems house who offers turnkey and professional services for process control and commercial business applications on the IBM Series/1. They are not inclined to consider third party memory and/or peripherals since they are convinced that the maintenance/service support in Italy would not be adequate. Their main target is the Manufacturing sector where they have a lot of experience and a good client base to which they feel the Series/1 can be attractive, particularly for process control applications.

- SYSTEMS PROGRAMMING LTD, in the U.K., is primarily a systems/ software house aiming to offer their RTL/2 high level language on the Series/1 for real-time applications, communications and on-line data collection. As a language RTL/2 has been adopted by a number of very large companies (e.g. Fiat, Plessey, GEC, Philips) and some European Goverment (Dutch, British) and thus the product's attraction on the Series/1 is almost "repeat" business.

SPL's business is therefore not hardware dependent, to a large degree.

- COGRAM, in Italy, has already installed 3 Series/1 and has a group of programmers working with IBM and users to develop (i) for the private sector a suite of standard packages on payroll/general ledger/order processing/production control/inventory control and (ii) for the public sector a suite of financial analysis/revenue collection packages. The private sector applications are being developed in COBOL and the public sector reports are being developed in PL/1.

- G B HIGGINS DATA SERVICES, in the UK, has formed a dedicated services division for turnkey Series/1 installations in South Wales, Gloucester, Cheltenham and Bristol. Their main target is the commercial business applications market using accounting packages, but they also offer to customize IBM's own applications. GBH is concentrating on the Food/Drink, Printing and Manufacturing sectors where IBM is having the greatest success with the Series/1.